

BADGER FIRE BURNED AREA EMERGENCY REHABILITATION (BAER) PLAN

AGENCY/UNIT: U.S. Fish and Wildlife Service
Sheldon National Wildlife Refuge

LOCATION: Humboldt and Washoe Counties, Nevada

DATE: September 17, 1999

PREPARED BY: United States Department of the Interior
Northern States Burned Area Emergency Rehabilitation Team

Submitted By: _____ **Date:** _____
DOI, BAER Team Leader, (Northern States)
Division of Refuge Planning, Region 1, U.S. Fish and Wildlife Service

EXECUTIVE SUMMARY

Introduction

This plan has been prepared in accordance with a memorandum and attachments from the Assistant Secretary of the Interior, Policy, Management and Budget, dated April 27, 1998; Subject: Policy Guidance and Direction, Wildland Fire Rehabilitation and Restoration. The rehabilitation objectives of the Badger Fire Burned Area Emergency Rehabilitation (BAER) Plan are:

- ? To prescribe post-fire mitigation measures necessary to protect human life, property, and critical cultural and natural resources.
- ? To protect the ecological integrity of affected lands from further degradation in accordance with the policies of the U.S. Fish and Wildlife Service, the land management plans for the Sheldon National Wildlife Refuge, and all relevant federal, state and local laws, policies and regulations.

Sheldon National Wildlife Refuge Executive Orders and Enabling Legislation

As well as meeting the requirements of the Department of the Interior (DOI), BAER Policy (April 1998), the Badger Fire Burned Area Emergency Rehabilitation Plan was developed to meet the legal requirements of the executive orders and enabling legislation that established Sheldon National Wildlife Refuge.

In 1931 President Herbert Hoover issued Executive Order No. 5540 establishing Charles Sheldon Wildlife Refuge administered by the U.S. Department of Agriculture as a wildlife reserve that prohibited hunting, trapping, capturing, willfully disturbing, or killing any wild animal or bird. In 1936 President Franklin D. Roosevelt signed Executive order 7522, which established the Charles Sheldon Antelope Range, withdrawing 539,000 acres in Nevada from settlement. Under this new order management of the refuge was placed under both the Department of Agriculture and the Department of the Interior. Responsibility for management of the areas natural forage and wildlife was given to the Department of the Interior.

Executive Order 7522 also established specific management priorities for the refuge. Under the order,

“... the natural forage resources therein shall be first utilized for the purpose of sustaining in a healthy condition a maximum of three thousand five hundred antelope, the primary species, and such nonpredatory secondary species in such numbers as may be necessary to maintain a balanced wildlife population...”

In 1976, Congress passed the Game Act which consolidated management of the refuge under the jurisdiction of the U.S. Fish and Wildlife Service under the name of Sheldon National Wildlife Refuge. The Act did not however, change the mandate for management of the refuge as established under Executive Order 7522.

Sheldon National Wildlife Refuge Management Requirements

The Sheldon National Wildlife Refuge Renewable Natural Resources Management Plan, Environmental Impact Statement (1980) includes a number of management objectives which are especially pertinent to the fire area and this rehabilitation effort and plan:

- ? Manage for healthy and balanced populations of pronghorn and other species of native wildlife in their natural habitat.

- ? Manage for threatened and endangered species of plants and animals in their natural ecosystem.
- ? Restore and maintain the structure, species composition, and processes of native ecological communities and ecosystems of the northern Great Basin Region
- ? Provide opportunities for wildlife/wildlands-dependent recreation and education oriented to the Great Basin ecosystem while maintaining the rugged, remote and undeveloped character of the Refuge.

Fire management program objectives related specifically to this plan include:

- ? Emergency rehabilitation activities will be conducted according to a site specific plan for burned areas, if treatment is required, to prevent or reduce potential damage to the soil or watershed.
- ? Use the interdisciplinary approach to survey burned areas and determine the need for emergency or long term rehabilitation. Aggressively mitigate adverse effects on burned areas when necessary. Treatments are to be initiated before damaging causing storms occur or as soon as possible.
- ? Promptly, and to the extent practical, mitigate the adverse effects of fire. Effects to be mitigated include but are not limited to loss of soil and on-site productivity, loss of water control and deterioration of water quality and threats to life and property on-site and off-site.

Fire Background

The Badger Fire was ignited by lightning on August 23, 1999, on the north side of Badger Mountain within the boundary of Sheldon National Wildlife Refuge (NWR), administered by the U.S. Department of the Interior (DOI), Fish and Wildlife Service (FWS). On the evening of August 24, FWS Fire Management Officer (FMO) Chris Farinetti turned the fire over to the Blue Mountain Incident Management Team with the fire at about 8,000 acres in size. By August 26 the fire had grown to approximately 35,000 acres. Burnout operations increased the fire to a final acreage of approximately 39,000 acres when declared contained on August 28th, and controlled on August 5th. This total acreage includes large portions of unburned areas within the fire perimeter.

The Badger fire burned primarily within grassland, sagebrush, bitterbrush and mountain mahogany cover types between 7,188 and 5620 feet in elevation. The fire perimeter encompassed approximately 39,000 acres of which 4,000 acres were unburned.

At its peak there were 757 personnel involved with the firefighting effort including 27 crews, 162 overhead, 7 air tankers, 6 helicopters, 4 dozers, and 20 engines from at least six different federal agencies and 9 different state or local fire departments. Total suppression costs for the fire have been estimated at approximately 2.9 million dollars for the period from August 23, 1999 to the present.

The Department of the Interior (DOI) Burned Area Emergency Rehabilitation (BAER) Team, Northern Team (Gasser) was requested by the U.S. Fish and Wildlife Service on August 30, 1999. However, because both the Northern and Southern States Teams had just completed a three week assignment on the Northern Nevada Fire Management Complex and limited staff remained eligible for dispatch to the Badger Incident. On September 6 a team consisting of Team Leader Hadley, two vegetation specialist, two archeologists, and a geographic information specialist arrived to work with refuge staff in development of this plan.

The BAER team, tasked with evaluation of short- and long - term rehabilitation needs, developed this plan to address the following issues associated with the fire:

- ? Cultural and natural resource values impacted by the fire or fire suppression actions.
- ? Facilities or improvements impacted by the fire or the suppression of the fire.
- ? Rehabilitation requirements established by federal law, policies and relevant Department of the Interior resources management mandates.
- ? Rehabilitation requirements established by state laws, policies and regulations.

The BAER team conducted field surveys during the course of its assignment to the fire in order to identify impacts and compile recommendations for rehabilitation of the affected lands. Surveys focused on vegetative loss and associated impacts to wildlife habitat, wild horse impacts on recovering vegetation, and exposed archeological sites, stabilization and protection of archeological resources. Twenty four different exigent rehabilitation treatments were prescribed by the team. Fire suppression related rehabilitation assignments were developed.

Issues Related to Plan Approval and Implementation

By policy, this Burned Area Emergency Rehabilitation plan extends over three years from the date of plan approval. Accordingly, given the likelihood that this plan will be approved early in fiscal year 2000, treatment specifications have been projected through to the fiscal year 2003. Initial program authorizations are provided in accordance with the approved plan. Emergency Fire Rehabilitation (EFR) funding is no year money and if projects are not completed in year one, they may be rolled over into year two, and from year two into year three.

Because immediate implementation of the plan is critical to its success, plan review and approval must be achieved quickly. Since the plan exceeds the authority delegated to the Service Project Leader and Regional Director, approval will require the review and concurrence by the Project Leader, Geographic and Programmatic Assistant Regional Directors, and the Regional Director, Portland Oregon. Approval is required by the FWS, Director of Fire Management, Boise Idaho.

The agency should move quickly to establish a temporary Project Implementation Leader with administrative assistance. The plan contains a specification with regard to establishment of these positions. The administrative assistant would be responsible for development and tracking of rehabilitation contracts, but not the duties that will be performed by the Contracting Officer Representatives duties that will be performed by the Project Implementation Leader.

A detailed fiscal tracking system should be established in anticipation of EFR approvals, ideally, a separate EFR account would be established with separate work codes assigned to each specification that is approved to facilitate fiscal accountability by individual project.

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PART A FIRE LOCATION AND BACKGROUND INFORMATION

Fire Name	Badger Fire	Date Controlled	Sept. 5, 1999
Fire Number	NV-SHR-304	Total Acres Burned	39,000
Agency Unit	Sheldon National Wildlife Refuge	Acres / Jurisdiction	
Region	Region 1	FWS	39,000
State(s)	Nevada	BIA	
County(s)	Humboldt & Washoe	BLM	
Ignition Date/Manner	August 23, 1999	NPS	
Zone	Northwest	Private	
Date Contained	August 28, 1999	State	

PART B NATURE OF PLAN

I. Type of Plan (check one box below):

<input type="checkbox"/>	Short-term Rehabilitation (complete Parts A, B, C, and H only)
<input type="checkbox"/>	Long-term Rehabilitation (complete all parts)
<input checked="" type="checkbox"/>	Both Long and Short Term Rehabilitation (completed all parts)

II. Type of Action (check one box below):

<input checked="" type="checkbox"/>	Initial submission
<input type="checkbox"/>	Updating or revising the initial submission
<input type="checkbox"/>	Supplying information for accomplishment to date on work underway
<input type="checkbox"/>	Different phase of project plan
<input type="checkbox"/>	Final report (to comply with the closure of the EFR account)

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PART C REHABILITATION ASSESSMENT

I. Badger Fire Burned Area Emergency Rehabilitation Incident Objectives

- ? Recommend post-fire rehabilitation prescriptions and funding sources which prevent irreversible loss of natural and cultural resources.
- ? As practical and necessary, restore natural conditions to areas disturbed by fire suppression actions.
- ? Assess and prescribe mitigation and recovery protocols for cultural sites disturbed by fire suppression actions.
- ? Conduct immediate post-burn reconnaissance for fire and fire suppression related impacts to T&E species.
- ? Provide long-term monitoring recommendations intended to ensure the success of rehabilitation efforts.

II. Rehabilitation Recommendations:

See Table E and Part F of this plan for Rehabilitation Recommendations.

III. BAER Team Members

SPECIALTY/PROFESSION	NAME/AGENCY	ASSESSMENT INCLUDED (Yes or No)
Team Leader	Richard Hadley (FWS)	N/A
Cultural Resource/Archeologist	Chuck James (BIA) Anan Raymond (FWS)	YES
Geographic Information Specialist	Tom Cochrane	N/A
Vegetation Specialist	Jim Youtz (BIA) Jeff Rosen	YES
Environmental Protection Spec.	Richard Hadley (USFWS)	YES

IV. **Resource Advisors:** (Note: Resource Advisors are individuals who assisted the BAER Team with the preparation of this plan. See Part H of this plan for a full list of agencies and individuals who were consulted or otherwise contributed to the development of this plan.

NAME	AFFILIATION, SPECIALTY, or PROFESSION
Mike Nunn	Project Leader (Sheldon - Hart Mtn. Complex)
Steve Clay	Deputy Project Leader (Sheldon - Hart Mtn Complex)
Mike Dunbar	Biologist (Sheldon - Hart Mtn. Complex)
Alicia Winters	Personnel
Gina Barr	Personnel
Mark Strong	Sheldon NWR Manager
Mike Gregg	Sheldon NWR Biologist
Tori Roberts	Outdoor Recreation Planner
Alicia Winters	Purchasing Agent
Chris Farinetti	Assistant Fire Management Officer
Elizabeth Caplun Cockrane	Information Management Specialist, Consultant

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PART D SUMMARY OF APPROVAL AUTHORITIES (By Activities/Cost)

ACTIVITIES REQUIRING REFUGE MANAGER APPROVAL	COST
Fire Suppression Damages (charged to Fire Suppression)	
Dozer line Rehabilitation	F
Dozer line Reseeding	\$5,065
Incident Command Post Rehabilitation	\$1,024
Regrade Dirt Roads Used for Fire Suppression	\$6,000
Conduct Cultural Resource Damage Assessment of Dozerlines	\$7,000
SUBTOTAL	\$19,089
ACTIVITIES REQUIRING REGIONAL OFFICE REVIEW/NIFC APPROVAL:	
Long-term EFR Rehabilitation request (charged to EFR)	
Seed Bottomlands as Forage for Pronghorn	\$48,530
Seed Bitterbrush & Mountain Mahogany Browse Areas	\$19,378
Seed Sage Grouse Habitat	\$11,540
Monitor Vegetative Recovery in Seeded and Unseeded Burned Areas	\$75,700
Monitor Vegetative Recovery with Aerial Photos	\$9,050
Exclude Wild Horse from Burned Area	\$440,000
Monitor Wild Horse Exclusion Area	\$12,000
Monitor Aspen Regeneration	\$1,250
Monitor Ungulate Distribution in Burned Area	\$138,520
Monitor Sage Grouse Distribution in Burned Area	\$123,680
Project Implementation Leader and Administrative Support	\$162,468
Remove Burned Fence Line	\$4,000
Re-Record Burned Archeological Sites	\$39,564
Conduct Law Enforcement Patrols to Protect Archeological Site	\$29,299
Conduct Native American Consultation	\$6,240
Data Management to Support Monitoring Program	\$80,312
Monitor Small Mammals Population and Distribution	\$63,500
Monitor Neotropical Migratory Bird Populations and Distribution	\$66,900
SUBTOTAL	\$1,331,931

Activities Requiring Refuge Manager Approval:	
Agency Operations Budget	
Monitor Vegetation Nutrition	\$171,940
SUBTOTAL	\$171,940

TOTAL REHABILITATION COST (short & long-term)	\$1,522,960
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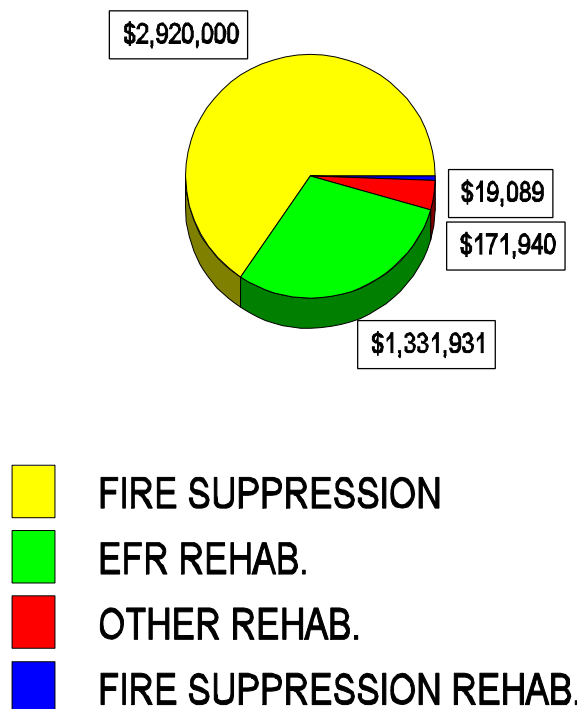
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PART E SUMMARY OF ACTIVITIES

The SUMMARY OF ACTIVITIES table identifies **trackable** rehabilitation costs charged or proposed for funding from fire suppression rehabilitation, emergency fire rehabilitation, agency operations, and other. Only trackable expenditures are displayed in the total cost column. They are coded with the appropriate cost authority. The total cost of the rehabilitation effort to date, excluding the costs absorbed by the fire (fire crew, labor and associated overhead) is displayed as either Fire Suppression Rehabilitation (F), Emergency Fire Rehabilitation (EFR), Agency Operations (OP) or Other (O).

Badger Fire

FUNDING SUMMARY - ESTIMATE \$4,442,960



PART E - SUMMARY OF ACTIVITIES - BADGER FIRE, SHELDON NATIONAL WILDLIFE REFUGE

TREATMENT SPECIFICATION	UNIT	UNIT COST	# OF UNITS	COST BY FUND SOURCE			IMPLEMENTATION METHOD	SPECIFICATION TOTAL
				FIRE	EFR	OP		
W-1a Dozerline Rehabilitation	MILES	-	15	F			EFC/FC	F
W-1b Reseed Dozerline	MILES	\$337.66	15	\$5,065			P	\$5,065
W-2 Regrade Dirt Roads Used as Fire Line	MILES	\$230.76	26	\$6,000			C	\$6,000
W-3 Reseed IC Camp	ACRES	\$512.00	2	\$1,024			P/C	\$1,024
N-1a Seed Bottomlands	ACRES	\$242.65	200		\$48,530		P	\$48,530
N-1b Seed Bitterbrush/Mtn. Mahogany Browse Areas	ACRES	\$86.12	225		\$19,378		P	\$19,378
N-1c Seed Sage Grouse Habitat	ACRES	\$57.70	200		\$11,540		P	\$11,540
N-1d Monitor Seeded & Unseeded Vegetation Recovery	PLOTS	\$3,785.00	20		\$75,700		C	\$75,700
N-1e Monitor Vegetative Recovery with Aerial Photographs	MILES	\$64.64	140		\$9,050		C	\$9,050
N-2a Exclude Wild Horses from Burned Area	HORSE	\$1,100.00	400		\$440,000		C	\$440,000
N-3a Monitor Wild Horses Exclusion Area	SURVEY	\$2,000.00	6		\$12,000		P	\$12,000
N-3b Monitor Aspen Regeneration	STANDS	\$125.00	10		\$1,250		P	\$1,250
N-4a Monitor Ungulate Distribution	SURVEY	\$46,137.00	3		\$138,520		C	\$138,520
N-4b Monitor Sage Grouse Distribution	SURVEY	\$41,226.00	3		\$123,680		C	\$123,680
N-4c Monitor Small Mammal Distribution	PLOTS	\$1,058.33	60		\$63,500		C	\$63,500
N-4d Monitor Neotropical Migratory Bird Distribution	PLOTS	\$1,456.66	45		\$66,900		C	\$66,900
N-4e Monitor Vegetation Nutrition	PLOTS	\$1,910.44	90			\$171,940	C	\$171,940
A-1 Project Implementation Leader and Administrative Support	YEAR	\$54,156.00	3		\$162,468		P	\$162,468

TREATMENT SPECIFICATION	UNIT	UNIT COST	# OF UNITS	COST BY FUND SOURCE			IMPLEMENTATION METHOD	SPECIFICATION TOTAL
				FIRE	EFR	OP		
S-1 Remove Burned Fence Line	MILES	\$1,333.00	3		\$4,000		C	\$4,000
C-1a Conduct Archeological Survey of Dozer Lines	MILES	\$466.66	15	\$7,000			C	\$7,000
C-1b Cultural Resource Damage Assessment & Monitoring	SITES	\$1,130.40	35		\$39,564		C	\$39,564
C-1 Conduct Law Enforcement Patrols to Protect Archeological Sites	DAYS	\$651.08	45		\$29,299		P	\$29,299
C-1 Native American Consultation	CONSULTATIONS	\$2,080.00	3		\$6,240		C	\$6,240
O-1 Data Management for Monitoring Programs	YEAR	\$26,770.00	3		\$80,312		P/C	\$80,312
TOTAL COST				\$19,089	\$1,331,931	\$17,1940		\$1,522,960
COST: F=Suppression; EFR=Long-term Rehab.; OP=Base Funding. METHOD: FC=Crews Assigned to Fire; C=Contract; EFC=Emergency Fire Contract; P=Agency Personnel								

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PART F - SPECIFICATIONS

SPECIFICATION TITLE:	DOZER LINE REHABILITATION	AGENCY:	U.S. Fish & Wildlife Service Sheldon National Wildlife Refuge
PART E LINE ITEM # - ACTION CATEGORY	W-1a - Erosion Control	FISCAL YEAR(S) (list each year):	1999

I. WORK TO BE DONE (describe or attach exact specifications of work to be done):

<p>Number and Describe Each Task:</p> <p>A. General Description: Dozer line rehabilitation will generally be rehabilitated with dozers on slopes up to 40% slope. Hand crews should be used on slopes greater than 40%.</p> <p>B. Location/(Suitable) Sites: Dozer lines have been mapped by the Incident Command Team and local resource staff.</p> <p>C. Design/Construction Specifications:</p> <ol style="list-style-type: none"> 1. Pull Berms: Pull berms back over dozer lines, recontouring the land surface. 2. Slash Placement: Scatter slash on slopes steeper than 20% 3. Hand Crew Water Rills: Construct water rills (breaks) on slopes. The construction of water rills is significantly different from building water bars. Water bars are intended to be durable and are constructed as long-term diversion devices. Water rills are only intended to break the energy of overland flows and should gradually disappear with time. Create water rills by mounding soil 4 to 6 inches in height at 45 degree angle to the dozer line. <p>D. Purpose of Treatment Specifications: Most of the dozer line has been rehabilitated adequately by fire suppression crews and equipment prior to demobilization. This specification is included to provide documentation of what has already been accomplished.</p>
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II. LABOR, MATERIALS AND OTHER COST:

? PERSONNEL SERVICES: (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item): Do not include contract personnel costs here (see contractor services below).	COST/ITEM
Rehabilitation of approximately 15 miles of dozer line has been accomplished (charged to fire suppression account and cost not tracked in this plan)	F
TOTAL PERSONNEL SERVICE COST	\$0
? EQUIPMENT PURCHASE, LEASE AND/OR RENT (Item @ Cost/Hour X # of Hours X #Fiscal Years = Cost/Item): Note: Purchases require written justification that demonstrates cost benefits over leasing or renting.	COST/ITEM
	N/A
TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COST	\$0
? MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item):	COST/ITEM
	N/A
TOTAL MATERIALS AND SUPPLY COST	\$0
? TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item):	COST/ITEM
	N/A
TOTAL TRAVEL COST	\$0
? CONTRACT COST (Labor or Equipment @ Cost/Hour X #Hours X #Fiscal Years = Cost/Item):	COST/ITEM
Dozer cost charged to fire suppression account and not tracked in this plan	F
TOTAL CONTRACT COST	\$0

SPECIFICATION COST SUMMARY

FISCAL YEAR	UNIT	UNITS COST	# OF UNITS	COST	FUNDING SOURCE	METHOD
FY 1	MILES	-	15.0	-	F	FC/C
FY 2						
FY 3						
TOTAL	MILES	-	15.0	-	F	FC/C

FUNDING SOURCES:

F = Fire Suppression
 EFR = Emergency Fire Rehabilitation
 OP = Agency Operating Fund
 O = Other

METHODS:

P = Agency Personnel Services
 C = Contact (long-term)
 EFC = Emergency Fire Contract
 FC = Crew Labor Assigned to Fire

SOURCE OF COST ESTIMATE

1. Estimate obtained from 2-3 independent contractual sources.	
2. Documented cost figures from similar project work obtained from local agency sources.	
3. Estimate supported by cost guides from independent sources or other federal agencies	
4. Estimates based upon government wage rates and material cost.	
5. No cost estimate required - cost charged to Fire Suppression Account	F

P = Personnel Services

M = Materials/Supplies

T = Travel

C = Contract

F = Suppression

III. RELEVANT DETAILS, MAPS AND DOCUMENTATION INCLUDED IN THIS REPORT:

List Relevant Documentation and Cross-Reference Location within BAER Report:
 See Appendix III, Fire Suppression Impacts Map for location of dozerlines.

**DEPARTMENT OF THE INTERIOR
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PART F - SPECIFICATIONS

SPECIFICATION TITLE:	RESEED DOZER LINE	AGENCY:	U.S. Fish & Wildlife Service Sheldon National Wildlife Refuge
PART E LINE ITEM # - ACTION CATEGORY	W-1b - Erosion Control	FISCAL YEAR(S) (list each year):	1999

I. WORK TO BE DONE (describe or attach exact specifications of work to be done):

Number and Describe Each Task:

A. General Description: Seeding is to be completed by ATV mounted spreader with a chain drag to incorporate seed into soil. The need for seeding, seed selection and application rates were determined in consultation with local area resource management staff. Seeding will establish within a short time as a temporary ground cover to decrease surface erosion.

B. Location/(Suitable) Sites: All designated exterior and interior dozer lines. (See Appendix III, Fire Suppression Impacts Map for dozer line locations.

C. Design/Construction Specifications:

- 1. SEED MIXTURE SELECTION AND CERTIFICATION:** The native seed mixture for the Badger Fire dozer lines was selected by the BAER Team Vegetation Specialists in consultation with local agency staff based on agency policies, regulations and mandates. Seeds should be tested for purity and germination rates. Before accepting delivery of seed shipment the contractor must provide written evidence (seed label and testing letter) to the agency that the seed conforms to the purity and germination requirements in the specification. All seed must be certified noxious weed free. Test methods specified in *Rules for Testing Seeds, Proceedings of the Association of Official Seed Analysts* will be accepted for determining the germination rate. Seed designated without a purity or germination rate shall be labeled to include name (month and year) collected, and the name and address of the seed supplier.

BADGER FIRE DOZER LINE NATIVE SEED MIXTURE

Common Name	Scientific Name	Percent of Mix
Bluebunch Wheatgrass	<i>Agropyron spicatum</i>	20 %
Mountain Brome	<i>Bromus marginatus</i>	15 %
Canby Bluegrass	<i>Poa canbyi</i>	30 %
Big Bluegrass	<i>Poa ampla</i>	20 %
Western Wheatgrass	<i>Agropyron smithii</i>	15 %

- 2. Equipment Requirements:** ATV, ATV mounted spreader and buckets.

- 3. Application Rate:** Seed will be applied at approximately 11 pounds per acre.

- 4. Seed Mixing:** When mixing seed of very different sizes and weights care must be taken to ensure that seeds are evenly distributed in the mixture to insure even on-ground distribution. Since smaller and heavier seeds will settle to the bottom of the mix it may be necessary to periodically shake the transportation containers to redistribute seeds.

- 5. Timing:** Seed is to be applied as soon as possible after dozer line rehabilitation work to take advantage of warm temperatures preceding early fall rains.

D. Purpose of Treatment Specifications: To rapidly reestablish ground cover to prevent erosion on fire lines.

II. LABOR, MATERIALS AND OTHER COST:

? PERSONNEL SERVICES: (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item): Do not include contract personnel costs here (see contractor services below).	COST/ITEM
Work to be completed by agency personnel with cost charged to the fire suppression account	\$1,625
TOTAL PERSONNEL SERVICE COST	\$1,625

? EQUIPMENT PURCHASE, LEASE AND/OR RENT (Item @ Cost/Hour X # of Hours X #Fiscal Years = Cost/Item): Note: Purchases require written justification that demonstrates cost benefits over leasing or renting.	COST/ITEM
ATV with spreader @ \$100 / day X 5 days	\$500
TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COST	\$500
? MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item):	COST/ITEM
Seed mix @ \$7.65 / lb. X 11 lbs / acre = \$84.15 / acre X 29 Acres	\$2,440
Misc. supplies	\$500
TOTAL MATERIALS AND SUPPLY COST	\$2,940
? TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item):	COST/ITEM
	N/A
TOTAL TRAVEL COST	\$0
? CONTRACT COST (Labor or Equipment @ Cost/Hour X #Hours X #Fiscal Years = Cost/Item):	COST/ITEM
	N/A
TOTAL CONTRACT COST	\$0

SPECIFICATION COST SUMMARY

FISCAL YEAR	UNIT	UNITS COST	# OF UNITS	COST	FUNDING SOURCE	METHOD
FY 1	MILES	\$337.66	15.0	\$5,065	F	P
FY 2						
FY 3						
TOTAL	MILES	\$337.66	15.0	\$5,065	F	P

FUNDING SOURCES:

F = Fire Suppression
 EFR = Emergency Fire Rehabilitation
 OP = Agency Operating Fund
 O = Other

METHODS:

P = Agency Personnel Services
 C = Contact (long-term)
 EFC = Emergency Fire Contract
 FC = Crew Labor Assigned to Fire

SOURCE OF COST ESTIMATE

1. Estimate obtained from 2-3 independent contractual sources.	M
2. Documented cost figures from similar project work obtained from local agency sources.	
3. Estimate supported by cost guides from independent sources or other federal agencies	
4. Estimates based upon government wage rates and material cost.	
5. No cost estimate required - cost charged to Fire Suppression Account	F

P = Personnel Services M = Materials/Supplies T = Travel C = Contract F = Suppression

III. RELEVANT DETAILS, MAPS AND DOCUMENTATION INCLUDED IN THIS REPORT:

List Relevant Documentation and Cross-Reference Location within BAER Report: See Appendix III for location of dozer lines and specification of rehabilitation of dozer line.
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**DEPARTMENT OF THE INTERIOR
BURNED AREA EMERGENCY REHABILITATION PLAN AND ACCOMPLISHMENT REPORT**

PART F - SPECIFICATIONS

SPECIFICATION TITLE:	REGRADE ROADS USED FOR FIRE SUPPRESSION	AGENCY:	U. S. Fish & Wildlife Service Sheldon National Wildlife Refuge
PART E LINE ITEM # - ACTION CATEGORY	W-2 - Erosion Control	FISCAL YEAR(S) (list each year):	2000

I. WORK TO BE DONE (describe or attach exact specifications of work to be done):

Number and Describe Each Task:

- A. General Description:** Rehabilitation of pre-existing roads is necessary to avoid erosion gullies and ponding on road surfaces due to blockage of drainage diversions by berms. The intent is not to improve the road but reestablish drainage structures. Road regrading should occur near the end of the incident as major traffic has diminished.
- B. Location/(Suitable) Sites:** See Treatment Map for dirt roads affected by fire suppression actions.
- C. Design/Construction Specifications:**
- 1. Recontour berms:** All materials (berms, brush, piles, etc.) created by Dozerline construction on the edge of the road shall be feathered out and recontoured.
 - 2. Water Dips:** Water dips shall be placed at 150 foot intervals on slopes greater than 5% and at 500 foot intervals on slopes less than 5%. Water dips shall be placed at a 45 degree angle to the road and shall drain to the downhill side of the road.
 - 3. Culverts:** All culverts will be cleared of materials placed by dozerline construction
 - 4. Drainages:** No side cast is to occur in any drainages, flowing or not.
 - 5. Regrade:** Interior road surfaces heavily used by fire suppression are to be regraded.
- D. Purpose of Treatment Specifications:** Regrading will prevent the formation of erosion gullies on road surfaces affected by fire suppression activities. Road damage by suppression actions must be rehabilitated to prevent adverse effects to water quality and to maintain reasonable public access to the refuge.

II. LABOR, MATERIALS AND OTHER COST:

? PERSONNEL SERVICES: (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item): Do not include contract personnel costs here (see contractor services below).	COST/ITEM
	N/A
TOTAL PERSONNEL SERVICE COST	\$0
? EQUIPMENT PURCHASE, LEASE AND/OR RENT (Item @ Cost/Hour X # of Hours X #Fiscal Years = Cost/Item): Note: Purchases require written justification that demonstrates cost benefits over leasing or renting.	COST/ITEM
	N/A
TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COST	\$0
? MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item):	COST/ITEM
	N/A
TOTAL MATERIALS AND SUPPLY COST	\$0
? TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item):	COST/ITEM
	N/A
TOTAL TRAVEL COST	\$0

? CONTRACT COST (Labor or Equipment @ Cost/Hour X #Hours X #Fiscal Years = Cost/Item):	COST/ITEM
Contracted grader operator @ X \$75 X hour X 80 hours	\$6,000
TOTAL CONTRACT COST	\$6,000

SPECIFICATION COST SUMMARY

FISCAL YEAR	UNIT	UNITS COST	# OF UNITS	COST	FUNDING SOURCE	METHOD
FY 1	MILES			\$6,000	F	C
FY 2						
FY 3						
TOTAL	MILES			\$6,000	F	C

FUNDING SOURCES:

F = Fire Suppression
 EFR = Emergency Fire Rehabilitation
 OP = Agency Operating Fund
 O = Other

METHODS:

P = Agency Personnel Services
 C = Contact (long-term)
 EFC = Emergency Fire Contract
 FC = Crew Labor Assigned to Fire

III. RELEVANT DETAILS, MAPS AND DOCUMENTATION INCLUDED IN THIS REPORT:

List Relevant Documentation and Cross-Reference Location within BAER Report:
 See Appendix III for location of roads.

**DEPARTMENT OF THE INTERIOR
BURNED AREA EMERGENCY REHABILITATION PLAN AND ACCOMPLISHMENT REPORT**

PART F - SPECIFICATIONS

SPECIFICATION TITLE:	RESEED INCIDENT COMMAND POST	AGENCY:	U.S. Fish & Wildlife Service Sheldon National Wildlife Refuge
PART E LINE ITEM # - ACTION CATEGORY	W-3 - Erosion Control and Soil Stabilization	FISCAL YEAR(S) (list each year):	2000

I. WORK TO BE DONE (describe or attach exact specifications of work to be done):

Number and Describe Each Task:

A. General Description: Seeding is to be completed after disking with a seed drilling machine. The need for seeding, seed selection and application rates were determined in consultation with local area resource management staff. Seeding will serve as an immediate, temporary ground cover to decrease surface erosion.

B. Location/(Suitable) Sites: Dufferina Field Station

C. Design/Construction Specifications:

- SEED MIXTURE SELECTION AND CERTIFICATION:** The native seed mixture for the Badger Fire Incident Command Post was selected by the BAER Team Vegetation Specialists in consultation with local agency staff based on agency policies, regulations and mandates. Seeds should be tested for purity and germination rates. Before accepting delivery of seed shipment the contractor must provide written evidence (seed label and testing letter) to the agency that the seed conforms to the purity and germination requirements in the specification. Test methods specified in *Rules for Testing Seeds, Proceedings of the Association of Official Seed Analyst* will be accepted for determining the germination rate. Seed designated without a purity or germination rate shall be labeled to include name (month and year) collected, and the name and address of the seed supplier. All seed must be certified noxious weed free.

BADGER INCIDENT COMMAND POST NATIVE SEED MIXTURE

Common Name	Scientific Name	Percent by Weight
Basin Wildrey	<i>Elymus cinereus</i>	45 %
Bottlebrush Squirreltail	<i>Sitanion hystrix</i>	5 %
Western Wheatgrass	<i>Agropyron spicatum</i>	50 %
Four-winged Saltbush	<i>Atriplex canescens</i>	addition to mix

- Equipment Requirements:** Tractor and disk. Seed drilling machine
- Application Rate:** Seed will be applied at approximately 16 pounds per acre.
- Seed Mixing:** When mixing seed of very different sizes and weights care must be taken to ensure that seeds are evenly distributed in the mixture to insure even on-ground distribution. Since smaller and heavier seeds will settle to the bottom of the mix it may be necessary to periodically shake the transportation containers to redistribute seeds.
- Timing:** Seed is to be applied as soon as possible to take advantage of warm temperatures preceding early fall rains.

D. Purpose of Treatment Specifications: To rapidly reestablish ground cover to prevent erosion on fire lines. Approximately 1 to 2 acres of vegetative cover were removed with dozers to create the incident command camp. The site has been heavily compacted.

II. LABOR, MATERIALS AND OTHER COST:

? PERSONNEL SERVICES: (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item): Do not include contract personnel costs here (see contractor services below).	COST/ITEM
	N/A
TOTAL PERSONNEL SERVICE COST	\$0

? EQUIPMENT PURCHASE, LEASE AND/OR RENT (Item @ Cost/Hour X # of Hours X #Fiscal Years = Cost/Item): Note: Purchases require written justification that demonstrates cost benefits over leasing or renting.	COST/ITEM
GS-9 \$22.00 X 8 hours	\$176
TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COST	\$176
? MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item):	COST/ITEM
Seed mix @ \$ 248.85 / acres X 2 acres	\$498
TOTAL MATERIALS AND SUPPLY COST	\$498
? TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item):	COST/ITEM
	N/A
TOTAL TRAVEL COST	\$0
? CONTRACT COST (Labor or Equipment @ Cost/Hour X #Hours X #Fiscal Years = Cost/Item):	COST/ITEM
Tractor, disc, and seed drill	\$350
TOTAL CONTRACT COST	\$350

SPECIFICATION COST SUMMARY

FISCAL YEAR	UNIT	UNITS COST	# OF UNITS	COST	FUNDING SOURCE	METHOD
FY 1	ACRES	\$512.00	2.0	\$1,024	F	C/P
FY 2						
FY 3						
TOTAL	ACRES	\$512.00	2.0	\$1,024	F	C/P

FUNDING SOURCES:

F = Fire Suppression
EFR = Emergency Fire Rehabilitation
OP = Agency Operating Fund
O = Other

METHODS:

P = Agency Personnel Services
C = Contact (long-term)
EFC = Emergency Fire Contract
FC = Crew Labor Assigned to Fire

SOURCE OF COST ESTIMATE

1. Estimate obtained from 2-3 independent contractual sources.	M
2. Documented cost figures from similar project work obtained from local agency sources.	
3. Estimate supported by cost guides from independent sources or other federal agencies	
4. Estimates based upon government wage rates and material cost.	
5. No cost estimate required - cost charged to Fire Suppression Account	F

P = Personnel Services M = Materials/Supplies T = Travel C = Contract F = Suppression

III. RELEVANT DETAILS, MAPS AND DOCUMENTATION INCLUDED IN THIS REPORT:

List Relevant Documentation and Cross-Reference Location within BAER Report:
See Appendix III for location of Dufferina Incident Command Post.

**DEPARTMENT OF THE INTERIOR
BURNED AREA EMERGENCY REHABILITATION PLAN AND ACCOMPLISHMENT REPORT**

PART F - SPECIFICATIONS

SPECIFICATION TITLE:	SEED BOTTOMLANDS TO PROVIDE FORAGE FOR PRONGHORN	AGENCY:	U.S. Fish & Wildlife Service Sheldon National Wildlife Refuge
PART E LINE ITEM # - ACTION CATEGORY	N-1a Stabilize biotic communities to minimize unacceptable change to ecosystem structure & function	FISCAL YEAR(S) (list each year):	2000

I. WORK TO BE DONE (describe or attach exact specifications of work to be done):

Number and Describe Each Task:

A. General Description: Seeding is to be completed by an ATV mounted spreader. The need for seeding, seed selection and application rates were determined in consultation with local area resource management staff. Seeding will serve as an immediate, temporary ground cover to decrease surface erosion and will limit the establishment of rabbit brush, cheatgrass, and other undesirable vegetation in these area.

B. Location/(Suitable) Sites: Two hundred acres of burned bottomland which were vegetated with decadent shrub stands pre-fire.

C. Design/Construction Specifications:

- SEED MIXTURE SELECTION AND CERTIFICATION:** The native seed mixture for the Badger Fire dozer lines was selected by the BAER Team Vegetation Specialists in consultation with local agency staff based on agency policies, regulations and mandates. Seeds should be tested for purity and germination rates. Before accepting delivery of seed shipment the contractor must provide written evidence (seed label and testing letter) to the agency that the seed conforms to the purity and germination requirements in the specification. Test methods specified in *Rules for Testing Seeds, Proceedings of the Association of Official Seed Analyst* will be accepted for determining the germination rate. Seed designated without a purity or germination rate shall be labeled to include name (month and year) collected, and the name and address of the seed supplier.

BADGER FIRE DOZER LINE NATIVE SEED MIXTURE

Common Name	Scientific Name	Percent by Weight
Basin Wildrey	<i>Elymus cinereus</i>	15 %
Western Wheatgrass	<i>Agropyron smithii</i>	40 %
Bottlebrush Squarreltail	<i>Sitanion hystrix</i>	5 %
Bluebunch Wheatgrass	<i>Agropyron spicatum</i>	20 %
Sanberg's Bluegrass	<i>Poa sandbergi</i>	20 %

- Equipment Requirements:** ATV, ATV mounted spreader, drag chain to incorporate seed into soil, and buckets.

- Application Rate:** Seed will be applied at approximately 18 pounds per acre.

- Seed Mixing:** When mixing seed of very different sizes and weights care must be taken to ensure that seeds are evenly distributed in the mixture to insure even on-ground distribution. Since smaller and heavier seeds will settle to the bottom of the mix it may be necessary to periodically shake the transportation containers to redistribute seeds.

- Timing:** Seed is to be applied as soon as possible to take advantage of warm temperatures preceding early fall rains. Project should be completed prior to winter snow.

D. Purpose of Treatment Specifications: The enabling legislation for Sheldon NWR mandates that forage be managed primarily to support pronghorn and other secondary native species. Rabbit brush stands are abnormally dense in bottomland areas within and adjoining the burn area due to past livestock grazing and current high levels of wild horse use. Reseeding these areas with native grasses will help limit rabbit brush reestablishment via wind-born seeds and will facilitate rapid development of a grass dominated forage type for pronghorn. This treatment is consistent with DOI BAER policy for stabilization and prevention of unacceptable degradation of critical natural resources. Management of forage for pronghorn is also consistent with the Sheldon NWR Renewable Natural Resources Management Plan/EIS (1980).

II. LABOR, MATERIALS AND OTHER COST:

? PERSONNEL SERVICES: (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item): Do not include contract personnel costs here (see contractor services below).	COST/ITEM
GS-9 Range Con./Biologist @ \$22.00 / hour X 80 hours	\$1,760
GS-5 Bio. Tech. @ \$10.50 / hour X 80 hours X 2 positions	\$1,680
TOTAL PERSONNEL SERVICE COST	\$3,440
? EQUIPMENT PURCHASE, LEASE AND/OR RENT (Item @ Cost/Hour X # of Hours X #Fiscal Years = Cost/Item): Note: Purchases require written justification that demonstrates cost benefits over leasing or renting.	COST/ITEM
3 ATVs with spreader and drag chains plus fuel	\$3,000
TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COST	\$3,000
? MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item):	COST/ITEM
Seed mix @ \$11.50 / lb X 18.3 lbs / acre = \$210.45 / acre X 200 acres	\$42,090
TOTAL MATERIALS AND SUPPLY COST	\$42,090
? TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item):	COST/ITEM
	N/A
TOTAL TRAVEL COST	\$0
? CONTRACT COST (Labor or Equipment @ Cost/Hour X #Hours X #Fiscal Years = Cost/Item):	COST/ITEM
	N/A
TOTAL CONTRACT COST	\$0

SPECIFICATION COST SUMMARY

FISCAL YEAR	UNIT	UNITS COST	# OF UNITS	COST	FUNDING SOURCE	METHOD
FY 1	ACRES	\$242.65	200.0	\$48,530	EFR	P
FY 2						
FY 3						
TOTAL	ACRES	\$242.65	200.0	\$48,530	EFR	P

FUNDING SOURCES:

F = Fire Suppression
 EFR = Emergency Fire Rehabilitation
 OP = Agency Operating Fund
 O = Other

METHODS:

P = Agency Personnel Services
 C = Contact (long-term)
 EFC = Emergency Fire Contract
 FC = Crew Labor Assigned to Fire

SOURCE OF COST ESTIMATE

1. Estimate obtained from 2-3 independent contractual sources.	M
2. Documented cost figures from similar project work obtained from local agency sources.	C
3. Estimate supported by cost guides from independent sources or other federal agencies	
4. Estimates based upon government wage rates and material cost.	
5. No cost estimate required - cost charged to Fire Suppression Account	

P = Personnel Services M = Materials/Supplies T = Travel C = Contract F = Suppression

III. RELEVANT DETAILS, MAPS AND DOCUMENTATION INCLUDED IN THIS REPORT:

List Relevant Documentation and Cross-Reference Location within BAER Report: See Post Fire Vegetation Map for locations of bottomland seeding areas.
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**DEPARTMENT OF THE INTERIOR
BURNED AREA EMERGENCY REHABILITATION PLAN AND ACCOMPLISHMENT REPORT**

PART F - SPECIFICATIONS

SPECIFICATION TITLE:	SEED CRITICAL BROWSE STANDS WITH BITTERBRUSH & MOUNTAIN MAHOGANY	AGENCY:	U.S. Fish & Wildlife Service Sheldon National Wildlife Refuge
PART E LINE ITEM # - ACTION CATEGORY	N-1b - Stabilize biotic communities to minimize unacceptable change to ecosystem structure & function	FISCAL YEAR(S) (list each year):	2000

I. WORK TO BE DONE (describe or attach exact specifications of work to be done):

Number and Describe Each Task:

A. General Description: Seeding is to be completed with an ATV mounted spreader and drag chain to incorporate seed into soil. The need for seeding, seed selection and application rates were determined in consultation with local area resource management staff. Seeding will serve to more quickly establish critical bitterbrush stands important to deer and antelope. Seeding of mountain mahogany seedlings will ensure that important stands of this limited vegetation type are reestablished to help sustain ungulate populations that utilize this habitat type for browse and cover (see purpose below also)

B. Location/(Suitable) Sites: Specific sites to be determined.

C. Design/Construction Specifications:

- SEED MIXTURE SELECTION AND CERTIFICATION:** This native seed mixture was selected by the BAER Team Vegetation Specialists in consultation with local agency staff based on agency policies, regulations and mandates. Seeds should be tested for purity and germination rates. Before accepting delivery of seed shipment the contractor must provide written evidence (seed label and testing letter) to the agency that the seed conforms to the purity and germination requirements in the specification. Test methods specified in *Rules for Testing Seeds, Proceedings of the Association of Official Seed Analyst* will be accepted for determining the germination rate. Seed designated without a purity or germination rate shall be labeled to include name (month and year) collected, and the name and address of the seed supplier. All seed must be certified noxious weed free.

BADGER FIRE BITTERBRUSH & MOUNTAIN MAHOGANY NATIVE SEED MIXTURE

Common Name	Scientific Name	Pounds / Acre (PLS)
Antelope Bitterbrush	<i>Purshia tridentata</i>	2 lbs.
Mountain Mahogany	<i>Cercocarpus ledifolius</i>	2 lbs.

- Equipment Requirements:** ATV, ATV mounted spreader, drag chain and buckets.

- Application Rate:** Seed mix will be applied at approximately 18 pounds per acre.

- Seed Mixing:** When mixing seed of very different sizes and weights care must be taken to ensure that seeds are evenly distributed in the mixture to insure even on-ground distribution. Since smaller and heavier seeds will settle to the bottom of the mix it may be necessary to periodically shake the transportation containers to redistribute seeds. Seed should be ordered pre-mixed with bulk filler (rice hulls)

- Timing:** Seed is to be applied as soon as possible to take advantage of warm temperatures preceding early fall rains. Seeding should be completed prior to snowfall.

D. Purpose of Treatment Specifications: The enabling legislation for Sheldon NWR mandates that forage be managed primarily to support pronghorn and other secondary native species. Included in the secondary species are mule deer and bighorn sheep. BITTERBRUSH stands and Mountain Mahogany habitat is limited to a few higher elevation sites within the refuge and is important as forage for the refuges deer herd and as cover for bighorn sheep. Rapid replacement of a portion of the stands lost to the Badger Fire is important to sustaining both a health deer and bighorn sheep population on the refuge. This treatment is consistent with DOI BAER policy for stabilization and prevention of unacceptable degradation of critical natural resources. Management of forage for mule deer and cover for bighorn sheep is also consistent with the Sheldon NWR Renewable Natural Resources Management Plan/EIS (1980).

II. LABOR, MATERIALS AND OTHER COST:

? PERSONNEL SERVICES: (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item): Do not include contract personnel costs here (see contractor services below).	COST/ITEM
GS-9 Range Con./Biologist @ \$22.00 / hour X 80 hours	\$1,760
GS-5 Bio. Tech. @ \$10.50 / hour X 80 hours X 2 positions	\$1,680
TOTAL PERSONNEL SERVICE COST	\$3,440
? EQUIPMENT PURCHASE, LEASE AND/OR RENT (Item @ Cost/Hour X # of Hours X #Fiscal Years = Cost/Item): Note: Purchases require written justification that demonstrates cost benefits over leasing or renting.	COST/ITEM
3 ATVs with spreader and drag chains plus fuel	\$3,000
TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COST	\$3,000
? MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item):	COST/ITEM
Antelope Bitterbrush seed @ \$61.50 / acre X 200 acres	\$12,300
Mountain Mahogany seed @ \$25.50 / acre X 25 acres	\$638
TOTAL MATERIALS AND SUPPLY COST	\$12,938
? TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item):	COST/ITEM
	N/A
TOTAL TRAVEL COST	\$0
? CONTRACT COST (Labor or Equipment @ Cost/Hour X #Hours X #Fiscal Years = Cost/Item):	COST/ITEM
	N/A
TOTAL CONTRACT COST	\$0

SPECIFICATION COST SUMMARY

FISCAL YEAR	UNIT	UNITS COST	# OF UNITS	COST	FUNDING SOURCE	METHOD
FY 1	ACRE	\$86.12	225.0	\$19,378	EFR	P
FY 2						
FY 3						
TOTAL	ACRE	\$86.12	225.0	\$19,378	EFR	P

FUNDING SOURCES:

F = Fire Suppression
 EFR = Emergency Fire Rehabilitation
 OP = Agency Operating Fund
 O = Other

METHODS:

P = Agency Personnel Services
 C = Contact (long-term)
 EFC = Emergency Fire Contract
 FC = Crew Labor Assigned to Fire

SOURCE OF COST ESTIMATE

1. Estimate obtained from 2-3 independent contractual sources.	M
2. Documented cost figures from similar project work obtained from local agency sources.	C
3. Estimate supported by cost guides from independent sources or other federal agencies	
4. Estimates based upon government wage rates and material cost.	
5. No cost estimate required - cost charged to Fire Suppression Account	

P = Personnel Services M = Materials/Supplies T = Travel C = Contract F = Suppression

III. RELEVANT DETAILS, MAPS AND DOCUMENTATION INCLUDED IN THIS REPORT:

List Relevant Documentation and Cross-Reference Location within BAER Report: See Post-Fire Vegetation Map for location of bitterbrush and mountain mahogany stands to be reseed/planted

**DEPARTMENT OF THE INTERIOR
BURNED AREA EMERGENCY REHABILITATION PLAN AND ACCOMPLISHMENT REPORT**

PART F - SPECIFICATIONS

SPECIFICATION TITLE:	SEED ESSENTIAL SAGEBRUSH STANDS TO SUSTAIN SAGE GROUSE POPULATION	AGENCY:	U.S. Fish & Wildlife Service Sheldon National Wildlife Refuge
PART E LINE ITEM # - ACTION CATEGORY	N-1c - Stabilize biotic communities to minimize unacceptable change to ecosystem structure & function	FISCAL YEAR(S) (list each year):	1999

I. WORK TO BE DONE (describe or attach exact specifications of work to be done):

Number and Describe Each Task:

A. General Description: Seeding is to be completed ATV mounted spreader. The need for seeding, seed selection and application rates were determined in consultation with local area resource management staff. Seeding will serve to more quickly establish critical sagebrush stands important to declining populations of sage grouse.

B. Location/(Suitable) Sites: See Post-Fire Vegetation Map for location.

C. Design/Construction Specifications:

- SEED MIXTURE SELECTION AND CERTIFICATION:** This native seed mixture was selected by the BAER Team Vegetation Specialists in consultation with local agency staff based on agency policies, regulations and mandates. Seeds should be tested for purity and germination rates. Before accepting delivery of seed shipment the contractor must provide written evidence (seed label and testing letter) to the agency that the seed conforms to the purity and germination requirements in the specification. Test methods specified in *Rules for Testing Seeds, Proceedings of the Association of Official Seed Analyst* will be accepted for determining the germination rate. Seed designated without a purity or germination rate shall be labeled to include name (month and year) collected, and the name and address of the seed supplier.

BADGER FIRE SAGEBRUSH SEED MIXTURE

Common Name	Scientific Name	Pounds / Acre (PLS)
Wyoming Big Sagebrush		1 lbs.
<ol style="list-style-type: none"> Equipment Requirements: ATV mounted spreader and buckets. Application Rate: Seed will be applied at approximately 16 pounds per acre. Seed Mixing: When mixing seed of very different sizes and weights care must be taken to ensure that seeds are evenly distributed in the mixture to insure even on-ground distribution. Since smaller and heavier seeds will settle to the bottom of the mix it may be necessary to periodically shake the transportation containers to redistribute seeds. Timing: Seed is to be applied as soon as possible after dozer line rehabilitation work to take advantage of warm temperatures preceding early fall rains. 		
<p>D. Purpose of Treatment Specifications: The enabling legislation for Sheldon NWR mandates that forage be managed primarily to support pronghorn and other secondary native species. Included in the secondary species are sage grouse. While sagebrush is abundant in the area dense stands in bottom areas which are favored by sage grouse are less common in the burned area. Rapid replacement of a portion of these stands lost to the Badger Fire is important to sustain sage grouse populations in this portion of the refuge. This treatment is consistent with DOI BAER policy for stabilization and prevention of unacceptable degradation of critical natural resources. Management of important stands of sagebrush to support decline populations of sage grouse is consistent with the Sheldon NWR Renewable Natural Resources Management Plan/EIS (1980).</p>		

II. LABOR, MATERIALS AND OTHER COST:

? PERSONNEL SERVICES: (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item): Do not include contract personnel costs here (see contractor services below).	COST/ITEM
GS-9 Range Con./Biologist @ \$22.00 / hour X 80 hours	\$1,760
GS-5 Bio. Tech. @ \$10.50 / hour X 80 hours X 2 positions	\$1,680
TOTAL PERSONNEL SERVICE COST	\$3,440
? EQUIPMENT PURCHASE, LEASE AND/OR RENT (Item @ Cost/Hour X # of Hours X #Fiscal Years = Cost/Item): Note: Purchases require written justification that demonstrates cost benefits over leasing or renting.	COST/ITEM
3 ATVs with spreader and drag chains plus fuel	\$3,000
TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COST	\$3,000
? MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item):	COST/ITEM
Sagebrush seed mix @ \$25.50 / acre X 200 acres	\$5,100
TOTAL MATERIALS AND SUPPLY COST	\$5,100
? TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item):	COST/ITEM
	N/A
TOTAL TRAVEL COST	\$0
? CONTRACT COST (Labor or Equipment @ Cost/Hour X #Hours X #Fiscal Years = Cost/Item):	COST/ITEM
TOTAL CONTRACT COST	

SPECIFICATION COST SUMMARY

FISCAL YEAR	UNIT	UNITS COST	# OF UNITS	COST	FUNDING SOURCE	METHOD
FY 1	ACRES	\$57.70	200.0	\$11,540	EFR	P
FY 2						
FY 3						
TOTAL	ACRES	\$57.70	200.0	\$11,540	EFR	P

FUNDING SOURCES:

F = Fire Suppression
 EFR = Emergency Fire Rehabilitation
 OP = Agency Operating Fund
 O = Other

METHODS:

P = Agency Personnel Services
 C = Contact (long-term)
 EFC = Emergency Fire Contract
 FC = Crew Labor Assigned to Fire

SOURCE OF COST ESTIMATE

1. Estimate obtained from 2-3 independent contractual sources.	
2. Documented cost figures from similar project work obtained from local agency sources.	
3. Estimate supported by cost guides from independent sources or other federal agencies	
4. Estimates based upon government wage rates and material cost.	
5. No cost estimate required - cost charged to Fire Suppression Account	

P = Personnel Services M = Materials/Supplies T = Travel C = Contract F = Suppression

III. RELEVANT DETAILS, MAPS AND DOCUMENTATION INCLUDED IN THIS REPORT:

List Relevant Documentation and Cross-Reference Location within BAER Report:
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**DEPARTMENT OF THE INTERIOR
BURNED AREA EMERGENCY REHABILITATION PLAN AND ACCOMPLISHMENT REPORT**

PART F - SPECIFICATIONS

SPECIFICATION TITLE:	MONITOR SEEDED & UNSEEDED VEGETATION RECOVERY	AGENCY:	U.S. Fish & Wildlife Service Sheldon National Wildlife Refuge
PART E LINE ITEM # - ACTION CATEGORY	N-1d - Monitor Treatment Results	FISCAL YEAR(S) (list each year):	2000-2003

I. WORK TO BE DONE (describe or attach exact specifications of work to be done):

Number and Describe Each Task:

- A. General Description:** Monitoring plots should be stratified by vegetation type and treatment type. Sensitive forage and cover types that have been reseeded to minimize unacceptable vegetation changes that jeopardize populations of pronghorn, sage grouse, deer, bighorn sheep, Neotropical migratory birds and small mammal populations will be monitored to determine the effectiveness of reseeding treatments. Non-treated areas will be monitored to evaluate progress of natural revegetation, and to determine if supplemental seeding is necessary. While funding has been identified for a three year period. Should first or second year monitoring document adequate vegetative recovery subsequent year funding will not be necessary.
- B. Location/(Suitable) Sites:** Reseed or planted areas within the Badger Fire burned area.
- C. Design/Construction Specifications:**
1. Vegetation sampling will include all burned areas, plus 15 miles of dozerline. Sample areas should be stratified by pre-fire vegetation type and post-fire treatment (seeded and unseeded).
 2. Standard sampling will be conducted utilizing a systematic distribution of permanently marked plots.
 3. Plots will be sampled for canopy and ground cover, species composition, noxious weeds, and plant vigor.
- D. Purpose of Treatment Specifications:** These sites must be monitored to evaluate prevalence and density of shrubs and grasses to determine if treatments or natural revegetation were successful or if other treatments are required to ensure adequate revegetation. This treatment is consistent with DOI BAER policy for stabilization and prevention of unacceptable degradation of critical natural resources. Management of forage for mule deer and cover for bighorn sheep is also consistent with the Sheldon NWR Renewable Natural Resources Management Plan/EIS (1980).

II. LABOR, MATERIALS AND OTHER COST:

? PERSONNEL SERVICES: (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item): Do not include contract personnel costs here (see contractor services below).	COST/ITEM
	N/A
TOTAL PERSONNEL SERVICE COST	\$0
? EQUIPMENT PURCHASE, LEASE AND/OR RENT (Item @ Cost/Hour X # of Hours X #Fiscal Years = Cost/Item): Note: Purchases require written justification that demonstrates cost benefits over leasing or renting.	COST/ITEM
	N/A
TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COST	\$0
? MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item):	COST/ITEM
	N/A
TOTAL MATERIALS AND SUPPLY COST	\$0
? TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item):	COST/ITEM
	N/A
TOTAL TRAVEL COST	\$0

? CONTRACT COST (Labor or Equipment @ Cost/Hour X #Hours X #Fiscal Years = Cost/Item):	COST/ITEM
Monitor vegetation recovery including set-up, data collection, generation of report, and all costs for equipment, materials and travel X 3 years of monitoring	\$75,700
TOTAL CONTRACT COST	\$75,700

SPECIFICATION COST SUMMARY

FISCAL YEAR	UNIT	UNITS COST	# OF UNITS	COST	FUNDING SOURCE	METHOD
FY 1	PLOTS	\$2,385.00	20.0	\$47,700	EFR	C
FY 2	PLOTS	\$700.00	20.0	\$14,000	EFR	C
FY 3	PLOTS	\$700.00	20.0	\$14,000	EFR	C
TOTAL	PLOTS	\$3,785.00	20.0	\$75,700	EFR	C

FUNDING SOURCES:

F = Fire Suppression
 EFR = Emergency Fire Rehabilitation
 OP = Agency Operating Fund
 O = Other

METHODS:

P = Agency Personnel Services
 C = Contact (long-term)
 EFC = Emergency Fire Contract
 FC = Crew Labor Assigned to Fire

SOURCE OF COST ESTIMATE

1. Estimate obtained from 2-3 independent contractual sources.	
2. Documented cost figures from similar project work obtained from local agency sources.	C
3. Estimate supported by cost guides from independent sources or other federal agencies	
4. Estimates based upon government wage rates and material cost.	
5. No cost estimate required - cost charged to Fire Suppression Account	

P = Personnel Services M = Materials/Supplies T = Travel C = Contract F = Suppression

III. RELEVANT DETAILS, MAPS AND DOCUMENTATION INCLUDED IN THIS REPORT:

List Relevant Documentation and Cross-Reference Location within BAER Report: See Vegetation Assessment Appendix III for more details.

**DEPARTMENT OF THE INTERIOR
BURNED AREA EMERGENCY REHABILITATION PLAN AND ACCOMPLISHMENT REPORT**

PART F - SPECIFICATIONS

SPECIFICATION TITLE:	MONITOR VEGETATION RECOVERY WITH AERIAL PHOTOGRAPHS	AGENCY:	U.S. Fish & Wildlife Service Sheldon National Wildlife Refuge
PART E LINE ITEM # - ACTION CATEGORY	N-1c - Monitor Vegetation Treatments	FISCAL YEAR(S) (list each year):	2000 -2003

I. WORK TO BE DONE (describe or attach exact specifications of work to be done):

<p>Number and Describe Each Task:</p> <p>A. General Description: Air photography flight to provide coverage at specified scale, with standard stereo overlap used for photogrammatic purposes</p> <p>B. Location/(Suitable) Sites: Badger Fire Burned Area</p> <p>C. Design/Construction Specifications:</p> <ol style="list-style-type: none"> 1. Flight @ 1:12,000 nominal scale to consist of approximately 70 linear miles of flight line. The exposure frequency and flight controls to conform to USDA Farm Service standards for stereo overlap, geoposition, nominal scale, and flight line drift. Color prints and mylar overlays should also conform to agency standards. <p>D. Purpose of Treatment Specifications: To monitor vegetative recovery for both treated and untreated areas within the burn.</p>

II. LABOR, MATERIALS AND OTHER COST:

? PERSONNEL SERVICES: (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item): Do not include contract personnel costs here (see contractor services below).	COST/ITEM
15% agency administrative fee for photography flight X 2 years	\$1,050
TOTAL PERSONNEL SERVICE COST	\$1,050
? EQUIPMENT PURCHASE, LEASE AND/OR RENT (Item @ Cost/Hour X # of Hours X #Fiscal Years = Cost/Item): Note: Purchases require written justification that demonstrates cost benefits over leasing or renting.	COST/ITEM
	N/A
TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COST	\$0
? MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item):	COST/ITEM
	N/A
TOTAL MATERIALS AND SUPPLY COST	\$0
? TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item):	COST/ITEM
	N/A
TOTAL TRAVEL COST	\$0
? CONTRACT COST (Labor or Equipment @ Cost/Hour X #Hours X #Fiscal Years = Cost/Item):	COST/ITEM
70 miles flight line photography X 2 years	\$7,000
1 complete set of 1:12,000 nominal scale color positive paper prints @ \$500 / set X 2 sets	\$1,000
TOTAL CONTRACT COST	\$8,000

SPECIFICATION COST SUMMARY

FISCAL YEAR	UNIT	UNITS COST	# OF UNITS	COST	FUNDING SOURCE	METHOD
FY 1	MILES	\$64.64	70.0	\$4,525	EFR	C
FY 2						
FY 3	MILES	\$64.64	70.0	\$4,525		C
TOTAL	MILES	\$64.64	140.0	\$9,050	EFR	C

FUNDING SOURCES:

F = Fire Suppression
 EFR = Emergency Fire Rehabilitation
 OP = Agency Operating Fund
 O = Other

METHODS:

P = Agency Personnel Services
 C = Contact (long-term)
 EFC = Emergency Fire Contract
 FC = Crew Labor Assigned to Fire

SOURCE OF COST ESTIMATE

1. Estimate obtained from 2-3 independent contractual sources.	
2. Documented cost figures from similar project work obtained from local agency sources.	
3. Estimate supported by cost guides from independent sources or other federal agencies	
4. Estimates based upon government wage rates and material cost.	
5. No cost estimate required - cost charged to Fire Suppression Account	

P = Personnel Services M = Materials/Supplies T = Travel C = Contract F = Suppression

III. RELEVANT DETAILS, MAPS AND DOCUMENTATION INCLUDED IN THIS REPORT:

List Relevant Documentation and Cross-Reference Location within BAER Report:
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**DEPARTMENT OF THE INTERIOR
BURNED AREA EMERGENCY REHABILITATION PLAN AND ACCOMPLISHMENT REPORT**

PART F - SPECIFICATIONS

SPECIFICATION TITLE:	EXCLUDE WILD HORSES FROM FIRE PERIMETER	AGENCY:	U.S. Fish & Wildlife Service Sheldon National Wildlife Refuge
PART E LINE ITEM # - ACTION CATEGORY	N-2A - Stabilize biotic communities to minimize unacceptable change to ecosystem structure & function	FISCAL YEAR(S) (list each year):	2000 - 2003

I. WORK TO BE DONE (describe or attach exact specifications of work to be done):

Number and Describe Each Task:

A. General Description: The objectives are to: 1) remove up to 400 wild horses from within the Badger Fire perimeter and for a five mile radius outside the perimeter in a safe and humane manner; 2) provide for the safety and welfare of these horses; and 3) to facilitate post-fire range recovery required to support pronghorn, mule deer, sage grouse, and bighorn sheep. The project will be completed under a Cooperative Agreement similar to the 1998 agreement between the U.S. Fish and Wildlife Service and the National Wild Horse Sanctuary and Rescue.

B. Location/(Suitable) Sites: All lands within Badger Fire perimeter and for five mile radius outside the perimeter

C. Design/Construction Specifications:

1. Responsibilities Under Cooperative Agreement:

U.S. Fish & Wildlife Service will:

- ? Provide funding for work activities related to the capture and removal of feral horses from the Badger Fire burned area and a five mile radius outside the burned area at cost not to exceed \$1,100 per horse.
- ? Monitor progress of the capture and removal work (see monitoring specification below)
- ? Provide two portable trap corrals and any wing or drift fencing materials required. This material shall be kept at the Dufferina Field Station when not in use.
- ? Provide technical advice when needed.

Cooperator will:

- ? Be responsible for the safe capture, care, removal, transport, and disposition of up to 400 feral horses.
- ? Provide hay, water, and salt blocks for horses as required.
- ? Provide medicine, medical supplies, and medical attention for horses.
- ? Transport, set-up, and return portable corrals and fencing to Dufferina Field Station.
- ? Provide and be responsible for all saddle horses, personnel, and equipment necessary to complete the work.
- ? Be responsible for the future care of each captured animal in accordance with established Sanctuary policy.

2. Special Provisions: Trapping operations and subsequent handling and transportation of captured horses shall be in accordance with Public Law 92-223 dated February 27, 1976, and appropriate state laws. These provisions include, but are not limited, to the following:

- ? Under no circumstances will motorized vehicles and/or aircraft be used during the capture process.
- ? Payment by the Service will not be occur until it has been certified that all horses have been removed from the exclusion area. The certification process will involve an airplane reconnaissance made by staff of the U.S. Fish and Wildlife Service and the National Wild Horse Sanctuary and Rescue.
- ? All horses will be treated and handled in a humane manner. Every precaution shall be made to ensure that the horses are not injured or killed during the capture operation.
- ? Care shall be taken not harass or run other animals on the refuge.
- ? Mares heavy with foal, or with young foals by their sides, shall not be run if they tend to fall behind or split off from the band.
- ? Care shall be taken not to harass or run other animals on the refuge including deer, pronghorn, and bighorn sheep.
- ? Trucks used for transporting horses shall be equipped with non-skid floors (sand, etc.)
- ? All gathering shall occur during the daylight hours. This does not include transporting from the capture sites to loading corrals on the refuge.

D. Purpose of Treatment Specifications: The enabling legislation for Sheldon NWR mandates that forage be managed primarily to support pronghorn and other secondary native species including deer, bighorn sheep, and sage grouse. In order for burned vegetation to recover and to prevent unburned vegetation within the burned area from being over grazed it is necessary to remove wild horses from within the Badger Fire perimeter and for a five mile radius around the perimeter for three full growing seasons. This treatment is consistent with DOI BAER policy for stabilization and prevention of unacceptable degradation of critical natural resources. Management of forage for pronghorn and maintaining wild horse use to a minimum is also consistent with the *Sheldon NWR Horse Management Plan*, *Environmental Assessment* (1977), and the *Sheldon NWR Renewable Natural Resources Management Plan*, *Environmental Impact Statement* (1980).

II. LABOR, MATERIALS AND OTHER COST:

? PERSONNEL SERVICES: (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item): Do not include contract personnel costs here (see contractor services below).	COST/ITEM
	N/A
TOTAL PERSONNEL SERVICE COST	\$0
? EQUIPMENT PURCHASE, LEASE AND/OR RENT (Item @ Cost/Hour X # of Hours X #Fiscal Years = Cost/Item): Note: Purchases require written justification that demonstrates cost benefits over leasing or renting.	COST/ITEM
	N/A
TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COST	\$0
? MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item):	COST/ITEM
	N/A
TOTAL MATERIALS AND SUPPLY COST	\$0
? TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item):	COST/ITEM
	N/A
TOTAL TRAVEL COST	\$0
? CONTRACT COST (Labor or Equipment @ Cost/Hour X #Hours X #Fiscal Years = Cost/Item):	COST/ITEM
Capture, care, removal, transport, and disposition of wild horses @ \$1,100 each X 400 horses	\$440,000
TOTAL CONTRACT COST	\$440,000

SPECIFICATION COST SUMMARY

FISCAL YEAR	UNIT	UNITS COST	# OF UNITS	COST	FUNDING SOURCE	METHOD
FY 1	HEAD	\$1,100.00	350.0	\$385,000	EFR	C
FY 2	HEAD	\$1,100.00	25.0	\$27,500	EFR	C
FY 3	HEAD	\$1,100.00	25.0	\$27,500	EFR	C
TOTAL	HEAD	\$1,100.00	400.0	\$440,000	EFR	C

FUNDING SOURCES:

F = Fire Suppression
 EFR = Emergency Fire Rehabilitation
 OP = Agency Operating Fund
 O = Other

METHODS:

P = Agency Personnel Services
 C = Contact (long-term)
 EFC = Emergency Fire Contract
 FC = Crew Labor Assigned to Fire

SOURCE OF COST ESTIMATE

1. Estimate obtained from 2-3 independent contractual sources.	
2. Documented cost figures from similar project work obtained from local agency sources.	C
3. Estimate supported by cost guides from independent sources or other federal agencies	
4. Estimates based upon government wage rates and material cost.	
5. No cost estimate required - cost charged to Fire Suppression Account	

P = Personnel Services M = Materials/Supplies T = Travel C = Contract F = Suppression

III. RELEVANT DETAILS, MAPS AND DOCUMENTATION INCLUDED IN THIS REPORT:

<p>List Relevant Documentation and Cross-Reference Location within BAER Report: See Vegetation Assessment Appendix I for more details</p>
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**DEPARTMENT OF THE INTERIOR
BURNED AREA EMERGENCY REHABILITATION PLAN AND ACCOMPLISHMENT REPORT**

PART F - SPECIFICATIONS

SPECIFICATION TITLE:	MONITOR WILD HORSE EXCLUSION AREA	AGENCY:	U.S. Fish & Wildlife Service Sheldon National Wildlife Refuge
PART E LINE ITEM # - ACTION CATEGORY	N-1e - Monitor Treatment Results	FISCAL YEAR(S) (list each year):	2000 - 2003

I. WORK TO BE DONE (describe or attach exact specifications of work to be done):

Number and Describe Each Task:

- A. General Description:** U.S. Fish and Wildlife Service will monitor horse use within the Badger Fire exclusion area for three growing seasons utilizing a combination of routine aerial survey and on the ground observations.
- B. Location/(Suitable) Sites:** Badger Fire horse exclusion area (see Appendix III for map)
- C. Design/Construction Specifications:**
1. Service personnel will survey the exclusion area in early spring and fall for three growing seasons to locate horse use in the exclusion area.
 2. Service personnel will record any wild horse sittings within the exclusion area on normal patrols of the burned area.
 3. If detected horses would be removed from the area under the horse exclusion specification above.
- D. Purpose of Treatment Specifications:** To monitor effectiveness of horse removal specification in prevention of grazing on recovery burned areas and sensitive areas such as springs within the burned area. This treatment is consistent with DOI BAER policy for stabilization and prevention of unacceptable degradation of critical natural resources. Management of forage for pronghorn and maintaining wild horse use to a minimum is also consistent with the *Sheldon NWR Horse Management Plan, Environmental Assessment* (1977), and the *Sheldon NWR Renewable Natural Resources Management Plan, Environmental Impact Statement* (1980).

II. LABOR, MATERIALS AND OTHER COST:

? PERSONNEL SERVICES: (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item): Do not include contract personnel costs here (see contractor services below).	COST/ITEM
Personnel patrolling the burned area on normal duties will record wild horse use (charged to refuge operations and not tracked in this plan).	OP
TOTAL PERSONNEL SERVICE COST	\$0
? EQUIPMENT PURCHASE, LEASE AND/OR RENT (Item @ Cost/Hour X # of Hours X #Fiscal Years = Cost/Item): Note: Purchases require written justification that demonstrates cost benefits over leasing or renting.	COST/ITEM
	N/A
TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COST	\$0
? MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item):	COST/ITEM
	N/A
TOTAL MATERIALS AND SUPPLY COST	\$0
? TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item):	COST/ITEM
	N/A
TOTAL TRAVEL COST	\$0

? CONTRACT COST (Labor or Equipment @ Cost/Hour X #Hours X #Fiscal Years = Cost/Item):	COST/ITEM
Aerial survey of burned area @ \$500 / hour X 4 hours X 2 / year X 3 years	\$12,000
TOTAL CONTRACT COST	\$12,000

SPECIFICATION COST SUMMARY

FISCAL YEAR	UNIT	UNITS COST	# OF UNITS	COST	FUNDING SOURCE	METHOD
FY 1	SURVEY	\$2,000.00	2.0	\$4,000	EFR/OP	P/C
FY 2	SURVEY	\$2,000.00	2.0	\$4,000	EFR/OP	P/C
FY 3	SURVEY	\$2,000.00	2.0	\$4,000	EFR/OP	P/C
TOTAL	SURVEY	\$2,000.00	6.0	\$12,000	EFR/OP	P/C

FUNDING SOURCES:

F = Fire Suppression
 EFR = Emergency Fire Rehabilitation
 OP = Agency Operating Fund
 O = Other

METHODS:

P = Agency Personnel Services
 C = Contact (long-term)
 EFC = Emergency Fire Contract
 FC = Crew Labor Assigned to Fire

SOURCE OF COST ESTIMATE

1. Estimate obtained from 2-3 independent contractual sources.	
2. Documented cost figures from similar project work obtained from local agency sources.	C
3. Estimate supported by cost guides from independent sources or other federal agencies	
4. Estimates based upon government wage rates and material cost.	
5. No cost estimate required - cost charged to Fire Suppression Account	

P = Personnel Services M = Materials/Supplies T = Travel C = Contract F = Suppression

III. RELEVANT DETAILS, MAPS AND DOCUMENTATION INCLUDED IN THIS REPORT:

List Relevant Documentation and Cross-Reference Location within BAER Report: See Vegetation Assessment Appendix I and Wild Horse Exclusion specification above for more details.
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**DEPARTMENT OF THE INTERIOR
BURNED AREA EMERGENCY REHABILITATION PLAN AND ACCOMPLISHMENT REPORT**

PART F - SPECIFICATIONS

SPECIFICATION TITLE:	MONITOR ASPEN STAND REGENERATION	AGENCY:	U.S. Fish & Wildlife Service Sheldon National Wildlife Refuge
PART E LINE ITEM # - ACTION CATEGORY	N-1e - Stabilize biotic communities to minimize unacceptable change to ecosystem structure & function	FISCAL YEAR(S) (list each year):	2000

I. WORK TO BE DONE (describe or attach exact specifications of work to be done):

<p>Number and Describe Each Task:</p> <p>A. General Description: Monitor 10 relic aspen stands for regeneration to determine if exclosure are necessary to facilitate reestablishment.</p> <p>B. Location/(Suitable) Sites: See Vegetation Maps Appendix III for locations.</p> <p>C. Design/Construction Specifications:</p> <ol style="list-style-type: none"> 1. Sampling will be completed using a systematic distribution of permanently mark plots. 2. If monitoring determined that there area less than 1,000 seedlings per acre the agency is advised to prepare a supplemental request for construction of a wildlife exclosure to facilitate regeneration of the stands. <p>B. Purpose of Treatment Specifications: Aspen stands are rare within the refuge and are important to as either browse or cover for dear, bighorn sheep, and neotropical migratory birds. Burnt stands will be monitored after the first growing season to determine if exclosure should be installed to allow regeneration. This treatment is consistent with DOI BAER policy for stabilization and prevention of unacceptable degradation of critical natural resources, and is consistent with the <i>Sheldon NWR Renewable Natural Resources Management Plan, Environmental Impact Statement</i> (1980).</p>

II. LABOR, MATERIALS AND OTHER COST:

? PERSONNEL SERVICES: (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item): Do not include contract personnel costs here (see contractor services below).	COST/ITEM
GS-5 Biological Technician @ \$750 / pay period X 1 pay period	\$750
TOTAL PERSONNEL SERVICE COST	\$750
? EQUIPMENT PURCHASE, LEASE AND/OR RENT (Item @ Cost/Hour X # of Hours X #Fiscal Years = Cost/Item): Note: Purchases require written justification that demonstrates cost benefits over leasing or renting.	COST/ITEM
Vehicle cost and misc. field equipment and materials.	\$500
TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COST	\$500
? MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item):	COST/ITEM
	N/A
TOTAL MATERIALS AND SUPPLY COST	\$0
? TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item):	COST/ITEM
	N/A
TOTAL TRAVEL COST	\$0
? CONTRACT COST (Labor or Equipment @ Cost/Hour X #Hours X #Fiscal Years = Cost/Item):	COST/ITEM
	N/A
TOTAL CONTRACT COST	\$0

SPECIFICATION COST SUMMARY

FISCAL YEAR	UNIT	UNITS COST	# OF UNITS	COST	FUNDING SOURCE	METHOD
FY 1	STANDS	\$125.00	10.0	\$1,250	EFR	P
FY 2						
FY 3						
TOTAL	STANDS	\$125.00	10.0	\$1,250	EFR	P

FUNDING SOURCES:

F = Fire Suppression
 EFR = Emergency Fire Rehabilitation
 OP = Agency Operating Fund
 O = Other

METHODS:

P = Agency Personnel Services
 C = Contact (long-term)
 EFC = Emergency Fire Contract
 FC = Crew Labor Assigned to Fire

SOURCE OF COST ESTIMATE

1. Estimate obtained from 2-3 independent contractual sources.	
2. Documented cost figures from similar project work obtained from local agency sources.	
3. Estimate supported by cost guides from independent sources or other federal agencies	P/M
4. Estimates based upon government wage rates and material cost.	
5. No cost estimate required - cost charged to Fire Suppression Account	

P = Personnel Services M = Materials/Supplies T = Travel C = Contract F = Suppression

III. RELEVANT DETAILS, MAPS AND DOCUMENTATION INCLUDED IN THIS REPORT:

List Relevant Documentation and Cross-Reference Location within BAER Report:
 See Post-Fire Vegetation Map for location of burned aspen stands.

**DEPARTMENT OF THE INTERIOR
BURNED AREA EMERGENCY REHABILITATION PLAN AND ACCOMPLISHMENT REPORT**

PART F - SPECIFICATIONS

SPECIFICATION TITLE:	MONITOR UNGULATE DISTRIBUTION IN BURNED AREA	AGENCY:	U.S. Fish & Wildlife Service Sheldon National Wildlife Refuge
PART E LINE ITEM # - ACTION CATEGORY	N-1e - Stabilize biotic communities to minimize unacceptable change to ecosystem structure & function	FISCAL YEAR(S) (list each year):	2000 - 2003

I. WORK TO BE DONE (describe or attach exact specifications of work to be done):

Number and Describe Each Task:

- A. General Description:** This project is required to determine pronghorn, mule deer, and bighorn sheep habitat use and health changes in response to habitat restoration treatments. Results will be used to determine if further treatments will be required to ensure that unacceptable declines in forage and ungulate populations do not occur.
- B. Location/(Suitable) Sites:** Treated and untreated burned areas of the Badger Fire
- C. Design/Construction Specifications:**
1. Systematic sampling of pronghorn, mule deer and bighorn sheep use will be conducted for three year period.
 2. Results will be compiled into a report and analyzed in conjunction with vegetation monitoring.
 3. Recommendations will be made to management regarding whether monitoring and or additional treatments are necessary after each growing season.
- D. Purpose of Treatment Specifications:** The enabling legislation for Sheldon NWR mandates that forage be managed primarily to support pronghorn and other secondary native species. Included in the secondary species are mule deer and bighorn sheep. This monitoring is necessary to determine if the Badger Fire will cause adverse impacts these three key species and if further management action is warranted. This treatment is consistent with DOI BAER policy for stabilization and prevention of unacceptable degradation of critical natural resources. Management of important stands of sagebrush to support decline populations of sage grouse is consistent with the Sheldon NWR Renewable Natural Resources Management Plan/EIS (1980).

II. LABOR, MATERIALS AND OTHER COST:

? PERSONNEL SERVICES: (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item): Do not include contract personnel costs here (see contractor services below).	COST/ITEM
	N/A
TOTAL PERSONNEL SERVICE COST	\$0
? EQUIPMENT PURCHASE, LEASE AND/OR RENT (Item @ Cost/Hour X # of Hours X #Fiscal Years = Cost/Item): Note: Purchases require written justification that demonstrates cost benefits over leasing or renting.	COST/ITEM
	N/A
TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COST	\$0
? MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item):	COST/ITEM
	N/A
TOTAL MATERIALS AND SUPPLY COST	\$0
? TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item):	COST/ITEM
	N/A
TOTAL TRAVEL COST	\$0

? CONTRACT COST (Labor or Equipment @ Cost/Hour X #Hours X #Fiscal Years = Cost/Item):	COST/ITEM
Establish ungulate monitoring program to document ungulate use and health within the burned area X 3 years (Cost includes all materials, personnel, vehicles, helicopter, equipment and report production)	\$138,520
TOTAL CONTRACT COST	\$138,520

SPECIFICATION COST SUMMARY

FISCAL YEAR	UNIT	UNITS COST	# OF UNITS	COST	FUNDING SOURCE	METHOD
FY 1	SURVEY	\$24,880.00	3.0	\$74,640	EFR	C
FY 2	SURVEY	\$10,646.00	3.0	\$31,940	EFR	C
FY 3	SURVEY	\$10,646.00	3.0	\$31,940	EFR	C
TOTAL	SURVEY	\$46,137.00	3.0	\$138,520	EFR	C

FUNDING SOURCES:

F = Fire Suppression
 EFR = Emergency Fire Rehabilitation
 OP = Agency Operating Fund
 O = Other

METHODS:

P = Agency Personnel Services
 C = Contact (long-term)
 EFC = Emergency Fire Contract
 FC = Crew Labor Assigned to Fire

SOURCE OF COST ESTIMATE

1. Estimate obtained from 2-3 independent contractual sources.	
2. Documented cost figures from similar project work obtained from local agency sources.	C
3. Estimate supported by cost guides from independent sources or other federal agencies	
4. Estimates based upon government wage rates and material cost.	
5. No cost estimate required - cost charged to Fire Suppression Account	

P = Personnel Services M = Materials/Supplies T = Travel C = Contract F = Suppression

III. RELEVANT DETAILS, MAPS AND DOCUMENTATION INCLUDED IN THIS REPORT:

List Relevant Documentation and Cross-Reference Location within BAER Report:
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**DEPARTMENT OF THE INTERIOR
BURNED AREA EMERGENCY REHABILITATION PLAN AND ACCOMPLISHMENT REPORT**

PART F - SPECIFICATIONS

SPECIFICATION TITLE:	MONITOR SAGE GROUSE POPULATION & DISTRIBUTION IN BURNED AREA	AGENCY:	U.S. Fish & Wildlife Service Sheldon National Wildlife Refuge
PART E LINE ITEM # - ACTION CATEGORY	N-1e - Stabilize biotic communities to minimize unacceptable change to ecosystem structure & function	FISCAL YEAR(S) (list each year):	2000 - 2003

I. WORK TO BE DONE (describe or attach exact specifications of work to be done):

Number and Describe Each Task:

- A. General Description:** Conduct monitor program for sage grouse distribution and health within the burned area to determine if vegetation treatments and natural recovery are adequate to maintain the areas sage grouse population. Funding has been prescribed for a three year period, however if sage grouse use and population health are determined to be adequate during the first or second growing season monitoring in subsequent seasons will be discontinued.
- B. Location/(Suitable) Sites:** Sage grouse habitat within the Badger Fire burned area.
- C. Design/Construction Specifications:**
1. Conduct systematic sampling of sage grouse population size, distribution, and health within the burned area
 2. Produce report of findings after each growing season including management recommendation as to whether additional monitoring or treatments should be prescribed to recovery sage grouse populations within the Badger Fire burned area.
- D. Purpose of Treatment Specifications:** Sage grouse are a key species for which the Sheldon NWR was established. Sage grouse populations are currently declining and the species may soon be petitioned for listing under the Endangered Species Act. Monitoring of sage grouse populations, distribution, and health is an important indicator of the rate of recovery vegetative health within the Badger Fire burned area which will help management determine if supplement revegetation treatments should be prescribed. This treatment is consistent with DOI BAER policy for stabilization and prevention of unacceptable degradation of critical natural resources. Management of important stands of sagebrush to support decline populations of sage grouse is consistent with the Sheldon NWR Renewable Natural Resources Management Plan/EIS (1980).

II. LABOR, MATERIALS AND OTHER COST:

? PERSONNEL SERVICES: (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item): Do not include contract personnel costs here (see contractor services below).	COST/ITEM
	N/A
TOTAL PERSONNEL SERVICE COST	\$0
? EQUIPMENT PURCHASE, LEASE AND/OR RENT (Item @ Cost/Hour X # of Hours X #Fiscal Years = Cost/Item): Note: Purchases require written justification that demonstrates cost benefits over leasing or renting.	COST/ITEM
	N/A
TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COST	\$0
? MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item):	COST/ITEM
	N/A
TOTAL MATERIALS AND SUPPLY COST	\$0
? TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item):	COST/ITEM
	N/A
TOTAL TRAVEL COST	\$0

? CONTRACT COST (Labor or Equipment @ Cost/Hour X #Hours X #Fiscal Years = Cost/Item):	COST/ITEM
Conduct sage grouse monitor including population size, distribution, and relative health within the Badger Fire Burned area (includes all equipment, materials, travel, report production, etc.)	\$123,680
TOTAL CONTRACT COST	\$123,680

SPECIFICATION COST SUMMARY

FISCAL YEAR	UNIT	UNITS COST	# OF UNITS	COST	FUNDING SOURCE	METHOD
FY 1	SURVEY	\$77,964.00	1.0	\$77,964	EFR	C
FY 2	SURVEY	\$22,867.00	1.0	\$22,867	EFR	C
FY 3	SURVEY	\$22,867.00	1.0	\$22,867	EFR	C
TOTAL	SURVEY	\$41,226.00	3.0	\$123,680	EFR	C

FUNDING SOURCES:

F = Fire Suppression
 EFR = Emergency Fire Rehabilitation
 OP = Agency Operating Fund
 O = Other

METHODS:

P = Agency Personnel Services
 C = Contact (long-term)
 EFC = Emergency Fire Contract
 FC = Crew Labor Assigned to Fire

SOURCE OF COST ESTIMATE

1. Estimate obtained from 2-3 independent contractual sources.	
2. Documented cost figures from similar project work obtained from local agency sources.	C
3. Estimate supported by cost guides from independent sources or other federal agencies	
4. Estimates based upon government wage rates and material cost.	
5. No cost estimate required - cost charged to Fire Suppression Account	

P = Personnel Services M = Materials/Supplies T = Travel C = Contract F = Suppression

III. RELEVANT DETAILS, MAPS AND DOCUMENTATION INCLUDED IN THIS REPORT:

List Relevant Documentation and Cross-Reference Location within BAER Report: See Vegetation Assessment, Appendix I for more details.
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**DEPARTMENT OF THE INTERIOR
BURNED AREA EMERGENCY REHABILITATION PLAN AND ACCOMPLISHMENT REPORT**

PART F - SPECIFICATIONS

SPECIFICATION TITLE:	MONITOR SMALL MAMMAL POPULATIONS & DISTRIBUTION WITHIN BURNED AREA	AGENCY:	U.S. Fish & Wildlife Service Sheldon National Wildlife Refuge
PART E LINE ITEM # - ACTION CATEGORY	N-1e - Stabilize biotic communities to minimize unacceptable change to ecosystem structure & function	FISCAL YEAR(S) (list each year):	2000 - 2003

I. WORK TO BE DONE (describe or attach exact specifications of work to be done):

Number and Describe Each Task:

- A. General Description:** This project is proposed to monitor response of small mammals to treated and untreated areas. The project is proposed for Emergency Fire Rehabilitation funding because, while the project may provide some indication as to why seeding treatments succeed or fail. Seeding has been proposed in this plan primarily to benefit pronghorn, bighorn sheep, deer, and sage grouse populations and not small mammal populations.
- B. Location/(Suitable) Sites:** Plots to be located in seeded and unseeded burned areas.
- C. Design/Construction Specifications:**
1. Conduct systematic sampling of seeded and unseeded burned areas using marked plots.
 2. Monitor plots for small mammal species diversity and population
 3. Record results and generate yearly report on response of small mammal populations to treated and untreated burned areas. Provide management with recommendation after the first growing season as to whether continued monitoring is warranted and are additional treatments are necessary.
- D. Purpose of Treatment Specifications:** To determine small mammal response to treated and untreated portion of the burned area. Small mammal population response may have an effect on success or failure of seeding treatments.

II. LABOR, MATERIALS AND OTHER COST:

? PERSONNEL SERVICES: (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item): Do not include contract personnel costs here (see contractor services below).	COST/ITEM
	N/A
TOTAL PERSONNEL SERVICE COST	\$0
? EQUIPMENT PURCHASE, LEASE AND/OR RENT (Item @ Cost/Hour X # of Hours X #Fiscal Years = Cost/Item): Note: Purchases require written justification that demonstrates cost benefits over leasing or renting.	COST/ITEM
	N/A
TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COST	\$0
? MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item):	COST/ITEM
	N/A
TOTAL MATERIALS AND SUPPLY COST	\$0
? TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item):	COST/ITEM
	N/A
TOTAL TRAVEL COST	\$0

? CONTRACT COST (Labor or Equipment @ Cost/Hour X #Hours X #Fiscal Years = Cost/Item):	COST/ITEM
Establish plots in treated and untreated portions of the burned area to determine small mammal response to treatments and potential affects on seeding success or failure	\$63,500
TOTAL CONTRACT COST	\$63,500

SPECIFICATION COST SUMMARY

FISCAL YEAR	UNIT	UNITS COST	# OF UNITS	COST	FUNDING SOURCE	METHOD
FY 1	PLOTS	\$1,230.00	20.0	\$24,600	EFR	C
FY 2	PLOTS	\$972.50	20.0	\$19,400	EFR	C
FY 3	PLOTS	\$972.50	20.0	\$19,400	EFR	C
TOTAL	PLOTS	\$1,058.33	60.0	\$63,500	EFR	C

FUNDING SOURCES:

F = Fire Suppression
 EFR = Emergency Fire Rehabilitation
 OP = Agency Operating Fund
 O = Other

METHODS:

P = Agency Personnel Services
 C = Contact (long-term)
 EFC = Emergency Fire Contract
 FC = Crew Labor Assigned to Fire

SOURCE OF COST ESTIMATE

1. Estimate obtained from 2-3 independent contractual sources.	
2. Documented cost figures from similar project work obtained from local agency sources.	C
3. Estimate supported by cost guides from independent sources or other federal agencies	
4. Estimates based upon government wage rates and material cost.	
5. No cost estimate required - cost charged to Fire Suppression Account	

P = Personnel Services M = Materials/Supplies T = Travel C = Contract F = Suppression

III. RELEVANT DETAILS, MAPS AND DOCUMENTATION INCLUDED IN THIS REPORT:

List Relevant Documentation and Cross-Reference Location within BAER Report:
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**DEPARTMENT OF THE INTERIOR
BURNED AREA EMERGENCY REHABILITATION PLAN AND ACCOMPLISHMENT REPORT**

PART F - SPECIFICATIONS

SPECIFICATION TITLE:	MONITOR NEOTROPICAL MIGRATORY BIRD DISTRIBUTION IN BURNED AREA	AGENCY:	U.S. Fish & Wildlife Service Sheldon National Wildlife Refuge
PART E LINE ITEM # - ACTION CATEGORY	N-1e - Stabilize biotic communities to minimize unacceptable change to ecosystem structure & function	FISCAL YEAR(S) (list each year):	2000 - 2003

I. WORK TO BE DONE (describe or attach exact specifications of work to be done):

<p>Number and Describe Each Task:</p> <p>A. General Description: Neotropical migratory bird populations have been documented to be in decline in North America. There are 10 documented neotropical migratory birds that inhabit the Badger Fire burned area. This project is proposed for emergency fire rehabilitation funding to monitor post-fire use and distribution of neotropical birds within the Badger Fire burned area.</p> <p>B. Location/(Suitable) Sites: Fifteen locations within the burned area to be determined at time of implementation</p> <p>C. Design/Construction Specifications:</p> <ol style="list-style-type: none"> 1. Establish approximately 15 sampling locations systematically throughout the burned area to monitor neotropical migratory bird diversity, abundance, and distribution. 2. Prepare annual report of findings including management recommendations as to whether monitoring should continue beyond the first or second year. <p>D. Purpose of Treatment Specifications: To determine post-fire effects on neotropical migratory birds from the Badger Fire.</p>
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II. LABOR, MATERIALS AND OTHER COST:

? PERSONNEL SERVICES: (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item): Do not include contract personnel costs here (see contractor services below).	COST/ITEM
	N/A
TOTAL PERSONNEL SERVICE COST	\$0
? EQUIPMENT PURCHASE, LEASE AND/OR RENT (Item @ Cost/Hour X # of Hours X #Fiscal Years = Cost/Item): Note: Purchases require written justification that demonstrates cost benefits over leasing or renting.	COST/ITEM
	N/A
TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COST	\$0
? MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item):	COST/ITEM
	N/A
TOTAL MATERIALS AND SUPPLY COST	\$0
? TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item):	COST/ITEM
	N/A
TOTAL TRAVEL COST	\$0
? CONTRACT COST (Labor or Equipment @ Cost/Hour X #Hours X #Fiscal Years = Cost/Item):	COST/ITEM
Conduct post-fire monitoring of neotropical migratory bird use and distribution within the burned area for 3 years (estimated cost includes all personnel, equipment, materials, and report production, etc.)	\$66,900
TOTAL CONTRACT COST	\$66,900

SPECIFICATION COST SUMMARY

FISCAL YEAR	UNIT	UNITS COST	# OF UNITS	COST	FUNDING SOURCE	METHOD
FY 1	PLOTS	\$2,326.66	15.0	\$34,900	EFR	C
FY 2	PLOTS	\$1,066.66	15.0	\$16,000	EFR	C
FY 3	PLOTS	\$1,066.66	15.0	\$16,000	EFR	C
TOTAL	PLOTS	\$1,486.66	45.0	\$66,900	EFR	C

FUNDING SOURCES:

F = Fire Suppression
 EFR = Emergency Fire Rehabilitation
 OP = Agency Operating Fund
 O = Other

METHODS:

P = Agency Personnel Services
 C = Contact (long-term)
 EFC = Emergency Fire Contract
 FC = Crew Labor Assigned to Fire

SOURCE OF COST ESTIMATE

1. Estimate obtained from 2-3 independent contractual sources.	
2. Documented cost figures from similar project work obtained from local agency sources.	C
3. Estimate supported by cost guides from independent sources or other federal agencies	
4. Estimates based upon government wage rates and material cost.	
5. No cost estimate required - cost charged to Fire Suppression Account	

P = Personnel Services M = Materials/Supplies T = Travel C = Contract F = Suppression

III. RELEVANT DETAILS, MAPS AND DOCUMENTATION INCLUDED IN THIS REPORT:

List Relevant Documentation and Cross-Reference Location within BAER Report:

**DEPARTMENT OF THE INTERIOR
BURNED AREA EMERGENCY REHABILITATION PLAN AND ACCOMPLISHMENT REPORT**

PART F - SPECIFICATIONS

SPECIFICATION TITLE:	MONITOR VEGETATION NUTRIENT LEVELS	AGENCY:	U.S. Fish & Wildlife Service Sheldon National Wildlife Refuge
PART E LINE ITEM # - ACTION CATEGORY	N-1e - Stabilize biotic communities to minimize unacceptable change to ecosystem structure & function	FISCAL YEAR(S) (list each year):	2000 - 2003

I. WORK TO BE DONE (describe or attach exact specifications of work to be done):

Number and Describe Each Task:

A. General Description: Monitor nutrient levels in vegetation in burned area to determine potential impacts to forage and wildlife. This project is proposed for non-emergency fire rehabilitation funding because it is not directly related to the effectiveness of revegetation treatments.

B. Location/(Suitable) Sites: Nutrient monitoring plot locations to be determined at the time of implementation

C. Design/Construction Specifications:

1. Establish nutrient monitoring plots to determine potential affects on wildlife within the burned area. Plots will be established in treated and untreated locations.
2. Prepare for report with finding including any management recommendations on future monitoring and any affects between treated and untreated locations.

D. Purpose of Treatment Specifications: Nutrient monitoring will help determine if wildlife species nutrition will be adversely impacted by

t h e B a d g e r F i r e .

II. LABOR, MATERIALS AND OTHER COST:

? PERSONNEL SERVICES: (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item): Do not include contract personnel costs here (see contractor services below).	COST/ITEM
	N/A
TOTAL PERSONNEL SERVICE COST	\$0
? EQUIPMENT PURCHASE, LEASE AND/OR RENT (Item @ Cost/Hour X # of Hours X #Fiscal Years = Cost/Item): Note: Purchases require written justification that demonstrates cost benefits over leasing or renting.	COST/ITEM
	N/A
TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COST	\$0
? MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item):	COST/ITEM
	N/A
TOTAL MATERIALS AND SUPPLY COST	\$0

? TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item):	COST/ITEM
	N/A
TOTAL TRAVEL COST	\$0
? CONTRACT COST (Labor or Equipment @ Cost/Hour X #Hours X #Fiscal Years = Cost/Item):	COST/ITEM
Establish approximately 30 vegetation nutrient sampling plots, monitor for 3 years and complete report on findings on an annual basis.	\$171,940
TOTAL CONTRACT COST	\$171,940

SPECIFICATION COST SUMMARY

FISCAL YEAR	UNIT	UNITS COST	# OF UNITS	COST	FUNDING SOURCE	METHOD
FY 1	PLOTS	\$2,943.33	30.0	\$83,300	OP	C
FY 2	PLOTS	\$1,477.33	30.0	\$44,320	OP	C
FY 3	PLOTS	\$1,477.33	30.0	\$44,320	OP	C
TOTAL	PLOTS	\$1,910.44	90.0	\$171,940	OP	C

FUNDING SOURCES:

F = Fire Suppression
 EFR = Emergency Fire Rehabilitation
 OP = Agency Operating Fund
 O = Other

METHODS:

P = Agency Personnel Services
 C = Contact (long-term)
 EFC = Emergency Fire Contract
 FC = Crew Labor Assigned to Fire

SOURCE OF COST ESTIMATE

1. Estimate obtained from 2-3 independent contractual sources.	
2. Documented cost figures from similar project work obtained from local agency sources.	C
3. Estimate supported by cost guides from independent sources or other federal agencies	
4. Estimates based upon government wage rates and material cost.	
5. No cost estimate required - cost charged to Fire Suppression Account	

P = Personnel Services M = Materials/Supplies T = Travel C = Contract F = Suppression

III. RELEVANT DETAILS, MAPS AND DOCUMENTATION INCLUDED IN THIS REPORT:

List Relevant Documentation and Cross-Reference Location within BAER Report:
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**DEPARTMENT OF THE INTERIOR
BURNED AREA EMERGENCY REHABILITATION PLAN AND ACCOMPLISHMENT REPORT**

PART F - SPECIFICATIONS

SPECIFICATION TITLE:	PROJECT IMPLEMENTATION AND ADMINISTRATION	AGENCY:	U.S. Fish & Wildlife Service Sheldon National Wildlife Refuge
PART E LINE ITEM # - ACTION CATEGORY	N-1e - Stabilize biotic communities to minimize unacceptable change to ecosystem structure & function	FISCAL YEAR(S) (list each year):	2000 - 2003

I. WORK TO BE DONE (describe or attach exact specifications of work to be done):

Number and Describe Each Task:

- A. General Description:** This specification provides for a full time project implementation leader and administrative support staff to assist with set-up account, contract development, tracking of project implementation accomplishments, and tracking of expenditures.
- B. Location/(Suitable) Sites:** Lakeview, Oregon
- C. Design/Construction Specifications:**
- Hire a term appointed full time implementation leader to manage over-all rehabilitation project for the Badger Fire
 - Hire full time administrative support staff to assist implementation leader.
- D. Purpose of Treatment Specifications:** To ensure timely and cost effective implementation of Badger Fire rehabilitation projects and to provide necessary administrative support to the project.

II. LABOR, MATERIALS AND OTHER COST:

? PERSONNEL SERVICES: (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item): Do not include contract personnel costs here (see contractor services below).	COST/ITEM
GS-11 Implementation Leader @ \$26.15 / hour x 80 hours / pay period X 18 pay periods X 3 years	\$112,968
GS-5 Administrative Clerk @ \$750 / pay period X 18 pay periods X 3 years	\$40,500
TOTAL PERSONNEL SERVICE COST	\$153,468
? EQUIPMENT PURCHASE, LEASE AND/OR RENT (Item @ Cost/Hour X # of Hours X #Fiscal Years = Cost/Item): Note: Purchases require written justification that demonstrates cost benefits over leasing or renting.	COST/ITEM
Misc. equipment @ \$3,000 / year X 3 years	\$9,000
TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COST	\$9,000
? MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item):	COST/ITEM
	N/A
TOTAL MATERIALS AND SUPPLY COST	\$0
? TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item):	COST/ITEM
	N/A
TOTAL TRAVEL COST	\$0
? CONTRACT COST (Labor or Equipment @ Cost/Hour X #Hours X #Fiscal Years = Cost/Item):	COST/ITEM
	N/A
TOTAL CONTRACT COST	\$0

SPECIFICATION COST SUMMARY

FISCAL YEAR	UNIT	UNITS COST	# OF UNITS	COST	FUNDING SOURCE	METHOD
FY 1	YEARS	\$54,156.00	1.0	\$54,156	EFR	P
FY 2	YEARS	\$54,156.00	1.0	\$54,156	EFR	P
FY 3	YEARS	\$54,156.00	1.0	\$54,156	EFR	P
TOTAL	YEARS	\$54,156.00	3.0	\$162,468	EFR	P

FUNDING SOURCES:

F = Fire Suppression
 EFR = Emergency Fire Rehabilitation
 OP = Agency Operating Fund
 O = Other

METHODS:

P = Agency Personnel Services
 C = Contact (long-term)
 EFC = Emergency Fire Contract
 FC = Crew Labor Assigned to Fire

SOURCE OF COST ESTIMATE

1. Estimate obtained from 2-3 independent contractual sources.	
2. Documented cost figures from similar project work obtained from local agency sources.	
3. Estimate supported by cost guides from independent sources or other federal agencies	P
4. Estimates based upon government wage rates and material cost.	
5. No cost estimate required - cost charged to Fire Suppression Account	

P = Personnel Services M = Materials/Supplies T = Travel C = Contract F = Suppression

III. RELEVANT DETAILS, MAPS AND DOCUMENTATION INCLUDED IN THIS REPORT:

List Relevant Documentation and Cross-Reference Location within BAER Report:

**DEPARTMENT OF THE INTERIOR
BURNED AREA EMERGENCY REHABILITATION PLAN AND ACCOMPLISHMENT REPORT**

PART F - SPECIFICATIONS

SPECIFICATION TITLE:	REMOVE DOWNED FENCE LINES	AGENCY:	U.S. Fish & Wildlife Service Sheldon National Wildlife Refuge
PART E LINE ITEM # - ACTION CATEGORY	S-1 Public Safety	FISCAL YEAR(S) (list each year):	2000

I. WORK TO BE DONE (describe or attach exact specifications of work to be done):

<p>Number and Describe Each Task:</p> <p>A. General Description: Remove barbed wire from approximately 3 miles of wood post fences lines burned in the badger fire</p> <p>B. Location/(Suitable) Sites: See Fire Suppression map for fence line locations.</p> <p>C. Design/Construction Specifications:</p> <p style="margin-left: 20px;">1. Removed downed barbed wire from wood post fences burned during the fire and dispose salvage materials</p> <p>D. Purpose of Treatment Specifications: To eliminate hazard to both public and large mammals including pronghorn, deer, bighorn sheep and horses.</p>

II. LABOR, MATERIALS AND OTHER COST:

? PERSONNEL SERVICES: (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item): Do not include contract personnel costs here (see contractor services below).	COST/ITEM
	N/A
TOTAL PERSONNEL SERVICE COST	\$0
? EQUIPMENT PURCHASE, LEASE AND/OR RENT (Item @ Cost/Hour X # of Hours X #Fiscal Years = Cost/Item): Note: Purchases require written justification that demonstrates cost benefits over leasing or renting.	COST/ITEM
	N/A
TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COST	\$0
? MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item):	COST/ITEM
	N/A
TOTAL MATERIALS AND SUPPLY COST	\$0
? TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item):	COST/ITEM
	N/A
TOTAL TRAVEL COST	\$0
? CONTRACT COST (Labor or Equipment @ Cost/Hour X #Hours X #Fiscal Years = Cost/Item):	COST/ITEM
Remove and dispose downed barbed wire from approximately 3 miles of fence line	\$4,000
TOTAL CONTRACT COST	\$4,000

SPECIFICATION COST SUMMARY

FISCAL YEAR	UNIT	UNITS COST	# OF UNITS	COST	FUNDING SOURCE	METHOD
FY 1	MILES	\$1,333.00	3.0	\$4,000	EFR	C
FY 2						
FY 3						
TOTAL	MILES	\$1,333.00	3.0	\$4,000	EFR	C

FUNDING SOURCES:

F = Fire Suppression
 EFR = Emergency Fire Rehabilitation
 OP = Agency Operating Fund
 O = Other

METHODS:

P = Agency Personnel Services
 C = Contact (long-term)
 EFC = Emergency Fire Contract
 FC = Crew Labor Assigned to Fire

SOURCE OF COST ESTIMATE

1. Estimate obtained from 2-3 independent contractual sources.	
2. Documented cost figures from similar project work obtained from local agency sources.	C
3. Estimate supported by cost guides from independent sources or other federal agencies	
4. Estimates based upon government wage rates and material cost.	
5. No cost estimate required - cost charged to Fire Suppression Account	

P = Personnel Services M = Materials/Supplies T = Travel C = Contract F = Suppression

III. RELEVANT DETAILS, MAPS AND DOCUMENTATION INCLUDED IN THIS REPORT:

List Relevant Documentation and Cross-Reference Location within BAER Report:
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**DEPARTMENT OF THE INTERIOR
BURNED AREA EMERGENCY REHABILITATION PLAN AND ACCOMPLISHMENT REPORT**

PART F - SPECIFICATIONS

SPECIFICATION TITLE:	COMPLETE CULTURAL RESOURCE DAMAGE ASSESSMENT OF DOZER LINE	AGENCY:	U.S. Fish & Wildlife Service Sheldon National Wildlife Refuge
PART E LINE ITEM # - ACTION CATEGORY	C-1 Cultural Resource Protection	FISCAL YEAR(S) (list each year):	2000

I. WORK TO BE DONE (describe or attach exact specifications of work to be done):

Number and Describe Each Task:

- A. General Description:** Suppression of the Badger Fire resulted in the construction of approximately 15 miles of dozer and hand line. Previously recorded sites, as well as others located during BAER inventories may have been damaged by suppression efforts. The majority of fire lines have not been comprehensively inventoried. This prescription focuses entirely on the inventory of disturbed areas and the evaluation of historic properties found within the disturbance for eligibility to the National Register of Historic Places. All dozer and hand line will receive survey coverage. Management recommendations will be developed for eligible properties in a manner responsive to the damage at, and information potential of the site.
- B. Location/Sites:** All areas of dozer and hand line.
- C. Design/Construction Specifications:**
1. Archival research of existing FWS/Nevada SHPO records
 2. In coordination with FWS, consult with tribal and knowledgeable persons.
 3. If private land is involved, obtain permission prior to entering
 4. Conduct field inventory. Record all sites on the forms required by the area.
 5. Prepare preliminary estimates of damage and significance of properties disturbed by line construction. Include analysis of potential effects to eligible cultural properties and recommendations for evaluation of significance for potentially eligible properties
- D. Purpose of Treatment Specification:** Identification, evaluation, protection and mitigation of significant cultural properties.

II. LABOR, MATERIALS AND OTHER COST:

? PERSONNEL SERVICES: (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item): Do not include contract personnel costs here (see contractor services below).	COST/ITEM
	N/A
TOTAL PERSONNEL SERVICE COST	\$0
? EQUIPMENT PURCHASE, LEASE AND/OR RENT (Item @ Cost/Hour X # of Hours X #Fiscal Years = Cost/Item): Note: Purchases require written justification that demonstrates cost benefits over leasing or renting.	COST/ITEM
	N/A
TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COST	\$0
? MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item):	COST/ITEM
	N/A
TOTAL MATERIALS AND SUPPLY COST	\$0
? TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item):	COST/ITEM
	N/A
TOTAL TRAVEL COST	\$0

? CONTRACT COST (Labor or Equipment @ Cost/Hour X #Hours X #Fiscal Years = Cost/Item):	COST/ITEM
Professional Services Contract, labor, per diem, overhead inclusive	\$7,000
TOTAL CONTRACT COST	\$7,000

FUNDING SOURCES:

F = Fire Suppression
 EFR = Emergency Fire Rehabilitation
 OP = Agency Operating Fund
 O = Other

METHODS:

P = Agency Personnel Services
 C = Contact (long-term
 EFC = Emergency Fire Contract
 FC = Crew Labor Assigned to Fire

SPECIFICATION COST SUMMARY

FISCAL YEAR	UNIT	UNITS COST	# OF UNITS	COST	FUNDING SOURCE	METHOD
FY 1	MILES	\$466.66	15.0	\$7,000	F	C
FY 2						
FY 3						
TOTAL	MILES	466/66	15.0	\$7,000	F	C

SOURCE OF COST ESTIMATE

1. Estimate obtained from 2-3 independent contractual sources.	
2. Documented cost figures from similar project work obtained from local agency sources.	C
3. Estimate supported by cost guides from independent sources or other federal agencies	
4. Estimates based upon government wage rates and material cost.	
5. No cost estimate required - cost charged to Fire Suppression Account	

P = Personnel Services M = Materials/Supplies T = Travel C = Contract F = Suppression

III. RELEVANT DETAILS, MAPS AND DOCUMENTATION INCLUDED IN THIS REPORT:

List Relevant Documentation and Cross-Reference Location within BAER Report:
 See Cultural Resource Assessment, Appendix I for more details.

**DEPARTMENT OF THE INTERIOR
BURNED AREA EMERGENCY REHABILITATION PLAN AND ACCOMPLISHMENT REPORT**

PART F - SPECIFICATIONS

SPECIFICATION TITLE:	CULTURAL RESOURCE DAMAGE ASSESSMENT & MONITORING	AGENCY:	U.S. Fish & Wildlife Service Sheldon National Wildlife Refuge
PART E LINE ITEM # - ACTION CATEGORY	C-1 Archeological Resource Protection	FISCAL YEAR(S) (list each year):	2000 - 2003

I. WORK TO BE DONE (describe or attach exact specifications of work to be done):

Number and Describe Each Task:

A. General Description: To conduct post-fire assessment of damages caused by suppression and rehabilitation activities to documented sites (estimate 5 sites); assess fire damage upon known and newly found cultural resources (estimate 26 sites); identify and assess any unreported cultural resources exposed as a result of the fire that are visible from roads and trails (estimate 2 sites); and monitor for effects from horse trampling (2 sites).

B. Location/Sites: Springs, along roads and trails and at known or documented sites.

C. Design/Construction Specification:

1. Archival research of existing FWL Regional, field office records and local museum files.
2. In coordination with FWS, consult with tribal organizations and knowledgeable organizations.
3. If applicable, obtain permission all private land owners prior to entering private property.
4. Record all sites on the forms required for the area.
5. Prepare analysis of potential effects to cultural properties.
6. Recommendations for evaluation of significance for potentially eligible properties.
7. Excavate 1- 1 x 1 meter test unit at one spring site exhibiting trampling and at one spring site not showing such damage. Establish a fixed photograph/monitoring point within four meters of each unit and record existing vegetation and soil condition including height above present ground surface at one and two meter increments from the fixed point.
8. Monitor for vegetation and soil disturbance through photographs and measurement. Record and photo-document changes in ground depth and document, as able, causes for such changes.

D. Purpose of Treatment Specification: Identification, evaluation, protection and mitigation of significant resources.

II. LABOR, MATERIALS AND OTHER COST:

? PERSONNEL SERVICES: (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item): Do not include contract personnel costs here (see contractor services below).	COST/ITEM
Contract Administration	\$1,522
TOTAL PERSONNEL SERVICE COST	\$1,522
? EQUIPMENT PURCHASE, LEASE AND/OR RENT (Item @ Cost/Hour X # of Hours X #Fiscal Years = Cost/Item): Note: Purchases require written justification that demonstrates cost benefits over leasing or renting.	COST/ITEM
	N/A
TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COST	\$0
? MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item):	COST/ITEM
Misc. supplies	\$42
TOTAL MATERIALS AND SUPPLY COST	\$42

? TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item):	COST/ITEM
	N/A
TOTAL TRAVEL COST	\$0
? CONTRACT COST (Labor or Equipment @ Cost/Hour X #Hours X #Fiscal Years = Cost/Item):	COST/ITEM
Contract Archeologist (historic & prehistoric) @ \$600 / site X 35 site assessments	\$21,000
Contract Archeologist (prehistoric) @ \$4,000 / site X 2 site testings	\$8,000
Contract Archeologist (prehistoric) @ \$300 / day X 6 days site monitoring	\$1,800
TOTAL CONTRACT COST	\$30,800

SPECIFICATION COST SUMMARY

FISCAL YEAR	UNIT	UNITS COST	# OF UNITS	COST	FUNDING SOURCE	METHOD
FY 1	SITES	\$1,043.40	35.0	\$36,520	EFR	C
FY 2	SITES	\$312.00	2.0	\$624	EFR	C
FY 3	SITES	\$312.00	2.0	\$624	EFR	C
TOTAL	SITES	\$1,130.40	35.0	\$39,564	EFR	C

FUNDING SOURCES:

F = Fire Suppression
 EFR = Emergency Fire Rehabilitation
 OP = Agency Operating Fund
 O = Other

METHODS:

P = Agency Personnel Services
 C = Contact (long-term)
 EFC = Emergency Fire Contract
 FC = Crew Labor Assigned to Fire

SOURCE OF COST ESTIMATE

1. Estimate obtained from 2-3 independent contractual sources.	
2. Documented cost figures from similar project work obtained from local agency sources.	C
3. Estimate supported by cost guides from independent sources or other federal agencies	
4. Estimates based upon government wage rates and material cost.	
5. No cost estimate required - cost charged to Fire Suppression Account	

P = Personnel Services M = Materials/Supplies T = Travel C = Contract F = Suppression

III. RELEVANT DETAILS, MAPS AND DOCUMENTATION INCLUDED IN THIS REPORT:

List Relevant Documentation and Cross-Reference Location within BAER Report:
 See Cultural Resource Assessment, Appendix I for more details

**DEPARTMENT OF THE INTERIOR
BURNED AREA EMERGENCY REHABILITATION PLAN AND ACCOMPLISHMENT REPORT**

PART F - SPECIFICATIONS

SPECIFICATION TITLE:	CONDUCT LAW ENFORCEMENT PATROLS OF EXPOSED ARCHEOLOGICAL SITES	AGENCY:	U.S. Fish & Wildlife Service Sheldon National Wildlife Refuge
PART E LINE ITEM # - ACTION CATEGORY	C-1c Cultural Resource Protection	FISCAL YEAR(S) (list each year):	2000

I. WORK TO BE DONE (describe or attach exact specifications of work to be done):

<p>Number and Describe Each Task:</p> <p>B. General Description: Patrol Badger Fire for violations of cultural resource laws. Vehicle and foot patrol should focus on areas where archaeological sites have been exposed by the fire.</p> <p>B. Location/Sites: All archaeological sites within the exterior boundaries of the Badger Fire.</p> <p>C. Design/Construction Specifications:</p> <ol style="list-style-type: none"> 1. Consultation with FWS field staff and archaeologist. 2. Random patrols including weekend period. <p>D. Purpose of Treatment Specifications: Protection of significant cultural properties, enforcement of FWS regulations and Archaeological Resources Protection Act.</p>

II. LABOR, MATERIALS AND OTHER COST:

? PERSONNEL SERVICES: (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item): Do not include contract personnel costs here (see contractor services below).	COST/ITEM
GS-9 @ \$27.21 / hour X 8 hours / day X 45 days	\$9,795
GS-7 @ \$22.23 / hour X 8 hours / day X 45 days	\$8,006
TOTAL PERSONNEL SERVICE COST	\$17,801
? EQUIPMENT PURCHASE, LEASE AND/OR RENT (Item @ Cost/Hour X # of Hours X #Fiscal Years = Cost/Item): Note: Purchases require written justification that demonstrates cost benefits over leasing or renting.	COST/ITEM
	N/A
TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COST	\$0
? MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item):	COST/ITEM
	N/A
TOTAL MATERIALS AND SUPPLY COST	\$0
? TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item):	COST/ITEM
250 miles / day X 45 days X .31 / mile	\$3,488
per diem @ \$89 / day X 2 X 45	\$8,010
TOTAL TRAVEL COST	\$11,498
? CONTRACT COST (Labor or Equipment @ Cost/Hour X #Hours X #Fiscal Years = Cost/Item):	COST/ITEM
	N/A
TOTAL CONTRACT COST	\$0

SPECIFICATION COST SUMMARY

FISCAL YEAR	UNIT	UNITS COST	# OF UNITS	COST	FUNDING SOURCE	METHOD
FY 1	DAYS	\$651.08	45.0	\$29,299	EFR	P
FY 2						
FY 3						
TOTAL	DAYS	\$651.08	45.0	\$29,299	EFR	P

FUNDING SOURCES:

F = Fire Suppression
 EFR = Emergency Fire Rehabilitation
 OP = Agency Operating Fund
 O = Other

METHODS:

P = Agency Personnel Services
 C = Contact (long-term)
 EFC = Emergency Fire Contract
 FC = Crew Labor Assigned to Fire

SOURCE OF COST ESTIMATE

1. Estimate obtained from 2-3 independent contractual sources.	
2. Documented cost figures from similar project work obtained from local agency sources.	
3. Estimate supported by cost guides from independent sources or other federal agencies	P
4. Estimates based upon government wage rates and material cost.	
5. No cost estimate required - cost charged to Fire Suppression Account	

P = Personnel Services M = Materials/Supplies T = Travel C = Contract F = Suppression

III. RELEVANT DETAILS, MAPS AND DOCUMENTATION INCLUDED IN THIS REPORT:

List Relevant Documentation and Cross-Reference Location within BAER Report:
 See Cultural Resource Assessment, Appendix I for more details.

**DEPARTMENT OF THE INTERIOR
BURNED AREA EMERGENCY REHABILITATION PLAN AND ACCOMPLISHMENT REPORT**

PART F - SPECIFICATIONS

SPECIFICATION TITLE:	NATIVE AMERICAN CONSULTATION	AGENCY:	U.S. Fish & Wildlife Service Sheldon National Wildlife Refuge
PART E LINE ITEM # - ACTION CATEGORY	C-1c Cultural Resource Compliance	FISCAL YEAR(S) (list each year):	2000-2003

I. WORK TO BE DONE (describe or attach exact specifications of work to be done):

Number and Describe Each Task:
<p>A. General Description: Consult with pertinent Native American tribal representatives regarding the Badger Fire cultural resource damage assessment strategy, results of assessment, and proposed monitoring and mitigation measures.</p> <p>B. Location/Sites: The consultation will be conducted with FWS at Sheldon NWR headquarters</p> <p>C. Design/Construction Specifications: Consultation with an estimated 4 tribal representatives will be conducted at the beginning of assessment, when report of results and proposed mitigation available, and at the conclusion of monitoring.</p> <p>D. Purpose of Treatment Specifications: To meet legislative mandates of the National Historic Preservation Act, Archaeological Resources Protection Act, Native American Graves Protection and Repatriation Act and other associated Federal legislation</p>

II. LABOR, MATERIALS AND OTHER COST:

? PERSONNEL SERVICES: (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item): Do not include contract personnel costs here (see contractor services below).	COST/ITEM
GS-9 @ \$27.21 / hour X 8 hours / day X 45 days	\$9,795
GS-7 @ \$22.23 / hour X 8 hours / day X 45 days	\$8,006
TOTAL PERSONNEL SERVICE COST	\$17,801
? EQUIPMENT PURCHASE, LEASE AND/OR RENT (Item @ Cost/Hour X # of Hours X #Fiscal Years = Cost/Item): Note: Purchases require written justification that demonstrates cost benefits over leasing or renting.	COST/ITEM
	N/A
TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COST	\$0
? MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item):	COST/ITEM
	N/A
TOTAL MATERIALS AND SUPPLY COST	\$0
? TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item):	COST/ITEM
250 miles / day X 45 days X .31 / mile	\$3,488
per diem @ \$89 / day X 2 X 45	\$8,010
TOTAL TRAVEL COST	\$11,498
? CONTRACT COST (Labor or Equipment @ Cost/Hour X #Hours X #Fiscal Years = Cost/Item):	COST/ITEM
	N/A
TOTAL CONTRACT COST	\$0

SPECIFICATION COST SUMMARY

FISCAL YEAR	UNIT	UNITS COST	# OF UNITS	COST	FUNDING SOURCE	METHOD
FY 1	DAYS	\$651.08	45.0	\$29,299	EFR	P
FY 2						
FY 3						
TOTAL	DAYS	\$651.08	45.0	\$29,299	EFR	P

FUNDING SOURCES:

F = Fire Suppression
 EFR = Emergency Fire Rehabilitation
 OP = Agency Operating Fund
 O = Other

METHODS:

P = Agency Personnel Services
 C = Contact (long-term)
 EFC = Emergency Fire Contract
 FC = Crew Labor Assigned to Fire

SOURCE OF COST ESTIMATE

1. Estimate obtained from 2-3 independent contractual sources.	
2. Documented cost figures from similar project work obtained from local agency sources.	
3. Estimate supported by cost guides from independent sources or other federal agencies	P
4. Estimates based upon government wage rates and material cost.	
5. No cost estimate required - cost charged to Fire Suppression Account	

P = Personnel Services M = Materials/Supplies T = Travel C = Contract F = Suppression

III. RELEVANT DETAILS, MAPS AND DOCUMENTATION INCLUDED IN THIS REPORT:

List Relevant Documentation and Cross-Reference Location within BAER Report:
 See Cultural Resource Assessment, Appendix I for more details.

**DEPARTMENT OF THE INTERIOR
BURNED AREA EMERGENCY REHABILITATION PLAN AND ACCOMPLISHMENT REPORT**

PART F - SPECIFICATIONS

SPECIFICATION TITLE:	DATA MANAGEMENT FOR MONITORING PROGRAM	AGENCY:	U.S. Fish & Wildlife Service Sheldon National Wildlife Refuge
PART E LINE ITEM # - ACTION CATEGORY	O-1 Technical Support	FISCAL YEAR(S) (list each year):	2000-2003

I. WORK TO BE DONE (describe or attach exact specifications of work to be done):

<p>Number and Describe Each Task:</p> <p>A. General description: Evaluate data management requirements and strategies in support of the monitoring efforts in the aftermath of the Badger fire, 1999; Design and implement an integrated data management system based on datasets generated by monitoring program; Establish pathways between databases, analytical tools and GIS; Address issues of data collection strategies, data quality, storage and security.</p> <p>B. Location: Lakeview Oregon</p> <p>C. Design/Construction specifications: Data Management System will address the following requirements:</p> <p>D. Purpose of Treatment Executive Order 12906 of 4/11/94 coordinating geographic data acquisition and access (i.e. metadata); USFWS information strategy for information sharing across programs boundaries.</p>

II. LABOR, MATERIALS AND OTHER COST:

? PERSONNEL SERVICES: (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item): Do not include contract personnel costs here (see contractor services below).	COST/ITEM
GS-5 @ \$2,434 / month X 6 months X 3 years	\$43,812
TOTAL PERSONNEL SERVICE COST	\$43,812
? EQUIPMENT PURCHASE, LEASE AND/OR RENT (Item @ Cost/Hour X # of Hours X #Fiscal Years = Cost/Item): Note: Purchases require written justification that demonstrates cost benefits over leasing or renting.	COST/ITEM
	N/A
TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COST	\$0
? MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item):	COST/ITEM
Misc. supplies	\$500
TOTAL MATERIALS AND SUPPLY COST	\$500
? TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item):	COST/ITEM
	N/A
TOTAL TRAVEL COST	\$0
? CONTRACT COST (Labor or Equipment @ Cost/Hour X #Hours X #Fiscal Years = Cost/Item):	COST/ITEM
Contracted data analysis and management in support of monitoring program	\$36,000
TOTAL CONTRACT COST	\$36,000

SPECIFICATION COST SUMMARY

FISCAL YEAR	UNIT	UNITS COST	# OF UNITS	COST	FUNDING SOURCE	METHOD
FY 1	YEAR	\$26,770.00	1.0	\$26,770	EFR	P/C
FY 2	YEAR	\$26,770.00	1.0	\$26,770	EFR	P/C
FY 3	YEAR	\$26,770.00	1.0	\$26,770	EFR	P/C
TOTAL	YEAR	\$651.08	3.0	\$80,312	EFR	P/C

FUNDING SOURCES:

F = Fire Suppression
 EFR = Emergency Fire Rehabilitation
 OP = Agency Operating Fund
 O = Other

METHODS:

P = Agency Personnel Services
 C = Contact (long-term)
 EFC = Emergency Fire Contract
 FC = Crew Labor Assigned to Fire

SOURCE OF COST ESTIMATE

1. Estimate obtained from 2-3 independent contractual sources.	
2. Documented cost figures from similar project work obtained from local agency sources.	C
3. Estimate supported by cost guides from independent sources or other federal agencies	P
4. Estimates based upon government wage rates and material cost.	
5. No cost estimate required - cost charged to Fire Suppression Account	

P = Personnel Services M = Materials/Supplies T = Travel C = Contract F = Suppression

III. RELEVANT DETAILS, MAPS AND DOCUMENTATION INCLUDED IN THIS REPORT:

List Relevant Documentation and Cross-Reference Location within BAER Report:
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**DEPARTMENT OF THE INTERIOR
BURNED AREA EMERGENCY REHABILITATION PLAN AND ACCOMPLISHMENT REPORT**

PART G POST-REHABILITATION MONITORING RECOMMENDATIONS

Short-term Monitoring:

- ? Conduct Cultural Resource Damage Assessment of Fire Suppression Impacts

Long-Term Monitoring:

- ? Monitor Seeded and Unseeded Vegetation Recovery
- ? Monitor Vegetation Recovery with Aerial Photography
- ? Monitor Wild Horse Exclusion Area
- ? Monitor Aspen Regeneration
- ? Monitor Ungulate Distribution within Burned Area
- ? Monitor Sage Grouse Distribution within Burned Area
- ? Monitor Small Mammal Distribution within Burned Area
- ? Monitor Neotropical Migratory Bird Distribution
- ? Monitor Vegetation Nutrition
- ? Cultural Resource Damage Assessment and Monitoring
- ? Conduct Law Enforcement Patrols to Protect Cultural Resources

**DEPARTMENT OF THE INTERIOR
BURNED AREA EMERGENCY REHABILITATION PLAN AND ACCOMPLISHMENT REPORT**

PART H CONSULTATIONS

U.S. Fish and Wildlife Service

Bill Leenhouts, National Interagency Fire Center
Don Voros, Region 1, Geographic Associate Regional Director, Portland
Andy Anderson, Region 1, Fire Management, Portland
Dennis Macomber, Region 1, Fire Management, Portland
Mike Nunn, Project Leader, Sheldon - Hart Mountain NWR Complex
Steve Clay, Deputy Project Leader, Sheldon - Hart Mountain NWR Complex
Mark Strong, Refuge Manager, Sheldon NWR
Mike Dunbar, Biologist, Sheldon - Hart Mountain NWR Complex
Tori Roberts, Outdoor Recreation Planner, Sheldon - Hart Mountain NWR Complex
Gina Barr, Administrative Assistant, Sheldon - Hart Mountain NWR Complex
Alica Winters, Purchasing Agent, Sheldon - Hart Mountain NWR Complex
Chris Farinetti, Assistant FMO, Sheldon - Hart Mountain NWR Complex
Andy Goheen, Prescribed Fire Specialist, Sheldon - Hart Mountain NWR Complex
Elizabeth Caplun Cochrane, Information Management Specialist, Contractor, Stillwater NWR

**DEPARTMENT OF THE INTERIOR
BURNED AREA EMERGENCY REHABILITATION PLAN AND ACCOMPLISHMENT REPORT**

PART I FWS - PROJECT LEADER

REVIEW AND APPROVAL

I. Suppression Related Rehabilitation Approval (check one box below):

- ☐ Approved
☐ Approved with Revision
☐ Disapproved

Explanation for revision or disapproval:

Project Leader, Sheldon - Hart Mountain NWR Complex

Date

II. Emergency Fire Rehabilitation (EFR) Review (check one box below):

- ☐ Concur
☐ Concur with Recommended Revision
☐ Do not Concur

Explanation for revision or non-concurrence:

Project Leader, Sheldon - Hart Mountain NWR Complex

Date

- ☐ Concur
☐ Concur with Recommended Revision
☐ Do not Concur

Explanation for revision or non-concurrence:

GARD, Columbia Basin Ecoregion

Date

- ☐ Concur
- ☐ Concur with Recommended Revision
- ☐ Do not Concur

Explanation for revision or non-concurrence:

PARD, Refuges and Realty

Date

- ☐ Concur
- ☐ Concur with Recommended Revision
- ☐ Do not Concur

Explanation for revision or non-concurrence:

Regional Director, Region 1

Date

III. Emergency Fire Rehabilitation (EFR) Approval (check one box below):

- ☐ Approved
- ☐ Approved with Revision
- ☐ Disapproved

Explanation for revision or non-concurrence:

Director, Branch of Fire Management, NIFC

Date

IV. Operational Base Funding Approval (check one box below):

- ☐ Approved
- ☐ Approved with Revision
- ☐ Disapproved

Explanation for revision or disapproval:

Regional Director, Region 1

Date

**DEPARTMENT OF THE INTERIOR
BURNED AREA EMERGENCY REHABILITATION PLAN AND ACCOMPLISHMENT REPORT**

APPENDIX I: BAER TEAM RESOURCE ASSESSMENTS

- ? Wildlife Resource Assessment
- ? Vegetation and Range Assessment
- ? Cultural Resource Assessment

**DEPARTMENT OF THE INTERIOR
BURNED AREA EMERGENCY REHABILITATION TEAM**

Badger Fire

WILDLIFE RESOURCE ASSESSMENT

I. ISSUES

- ? Determine impacts of fire and fire suppression actions to threatened and endangered species and/or habitat
- ? Determine impacts to primary wildlife life species protected by Sheldon National Wildlife Refuge executive orders and enabling legislation

II. OBSERVATIONS

Emergency consultation was held with the U.S. Fish and Wildlife Service (FWS), Ecological Services Division, Reno, Nevada, on threatened and endangered (T&E) wildlife species known to occur within the Badger Fire burned area. Research was conducted on species currently listed by the FWS to verify that no T&E wildlife species occur within the burned area. Contacts were made with local experts to determine if additional sensitive species of concern were potentially affected by the fire and suppression actions.

In addition to consultation under the Endangered Species Act, the executive orders and enabling legislation that established Sheldon National Wildlife Refuge, were examined to determine legal requirements for protection of wildlife species.

A. Background

In 1931 President Herbert Hoover issued Executive Order No. 5540 establishing Charles Sheldon Wildlife Refuge administered by the U.S. Department of Agricultural as a wildlife reserve that prohibited hunting, trapping, capturing, willfully disturbing, or killing any wild animal or bird. In 1936 President Franklin D. Roosevelt signed Executive order 7522, which established the Charles Sheldon Antelope Range, withdrawing 539,000 acres in Nevada from settlement. Under this new order management of the refuge was placed under both the Department of Agriculture and the Department of the Interior. Responsibility for management of the areas natural forage and wildlife was given to the Department of the Interior.

Executive Order 7522 also established specific management priorities for the refuge. Under the order,

“... the natural forage resources therein shall be first utilized for the purpose of sustaining in a healthy condition a maximum of three thousand five hundred antelope, the primary species, and such nonpredatory secondary species in such numbers as may be necessary to maintain a balanced wildlife population...”

In 1976, Congress passed the Game Act which consolidated management of the refuge under the jurisdiction of the U.S. Fish and Wildlife Service under the name of Sheldon National Wildlife Refuge. The Act did not however, change the mandate for management of the refuge as established under Executive Order 7522.

Sheldon National Wildlife Refuge Management Requirements

The *Sheldon National Wildlife Refuge Renewable Natural Resources Management Plan, Environmental Impact Statement (1980)* includes a number of management objectives which are especially pertinent to the fire area and this rehabilitation effort and plan:

- ? Manage for healthy and balanced populations of pronghorn and other species of native wildlife in their natural habitat.
- ? Manage for threatened and endangered species of plants and animals in their natural ecosystem.
- ? Restore and maintain the structure, species composition, and processes of native ecological communities and ecosystems of the northern Great Basin Region
- ? Provide opportunities for wildlife/wildlands-dependent recreation and education oriented to the Great Basin ecosystem while maintaining the rugged, remote and undeveloped character of the Refuge.

B. Reconnaissance Methodology and Results

On September 9, 1999 the BAER Team Wildlife Specialist met with the Refuge Wildlife Biologist and Refuge Manager to obtain baseline information pertaining to known T&E wildlife species. No T&E Wildlife Species were known to exist within the Badger Fire burned area. Species of primary management concern included pronghorn, California bighorn sheep, sage grouse, neotropical migratory birds, and mule deer.

Of major concern was the concentration of wild horses within unburned wildlife forage and habitat and the loss of rare browse and cover vegetation types including bitterbrush, mountain mahogany, and relic aspen stands.

Upon completion of consultation with local staff, and after review of the field conditions within the fire perimeter, it has been determine that no direct fire impacts have occurred to known populations of T&E wildlife. It was also determined that approximately 350 to 400 head of wild horses pose an immediate threat to recovering vegetation within the burned area and the remaining unburned vegetation, and that this intern poses an immediate threat to sustaining the feature wildlife species within Sheldon National Wildlife Refuge.

III. RECOMMENDATIONS

A. Management (specification related)

The primary wildlife related specification included in this plan is N-2a, Exclude Wild Horses from Badger Fire Perimeter for three full growing seasons. Reduction of the wild horse heard in the vicinity of the fire, consistent with the *Sheldon National Wildlife Refuge Wild Horse Management Plan, Environmental Assessment (1977)*, is considered an emergency action necessary to protect forage which supports pronghorn, California bighorn sheep, sage grouse, and mule deer for which the refuge was established.

Other wildlife related specifications intended to mitigate the impacts of vegetation loss are described in detail in the Vegetation Resource Assessment below and include: Seed of Bottomlands for Pronghorn Forage; Seed Bitterbrush and Mountain Mahogany Browse Areas; and, Seed Sage Grouse Habitat.

B. Monitoring (specification related)

A number of monitoring specification have been included in the plan to assist in determining if the above described specifications are affective and to determine if additional or modified treatments should be prescribed.

These specifications include: Monitor Vegetative Recovery in Seeded and Unseed Areas; Monitor Vegetative Recovery with Aerial Photography; Monitor Wild Horse Exclusion Area; Monitor Aspen Stand Regeneration; Monitor Ungulate Distribution; Monitor Sage Grouse Distribution; Monitor Small Mammal and Neotropical Migratory Bird Distribution; and Monitor Vegetation Nutrient Levels. The small mammal, neotropical bird, and nutrient monitoring is prescribed with non-emergency fire rehabilitation funding.

IV. CONSULTATIONS

U.S. Fish and Wildlife Service, Division of Ecological Services, Reno Nevada
Mike Nunn, Project Leader, Sheldon - Hart Mountain National Wildlife Refuge Complex
Steve Clay, Deputy Project Leader, Sheldon - Hart Mountain National Wildlife Refuge Complex
Mark Strong, Refuge Manager, Sheldon National Wildlife Refuge
Mike Dunbar, Biologist, Sheldon - Hart Mountain National Wildlife Refuge Complex

V. REFERENCES

Executive Order 7522, establishment of Charles Sheldon National Antelope Refuge

Executive Order No. 5540 establishing Charles Sheldon Wildlife Refuge

Sheldon National Wildlife Refuge Renewable Natural Resources Management Plan, Environmental Impact Statement (1980)

Sheldon National Wildlife Refuge Wild Horse Management Plan, Environmental Assessment (1977)

Richard Hadley, Wildlife Biologist, Division of Planning, U.S. Fish & Wildlife Service, (916) 414-6507

**DEPARTMENT OF THE INTERIOR
BURNED AREA EMERGENCY REHABILITATION TEAM**

Badger Fire

VEGETATION RESOURCE ASSESSMENT

I. ISSUES

- ? Evaluate and assess fire and suppression impacts to vegetative resources and identify values at risk associated with vegetative losses.
- ? Evaluate short and long-term impacts to plant communities and vegetative resources within the Badger Fire area on the Sheldon National Wildlife Refuge.
- ? Determine rehabilitation and monitoring needs supported by specifications to aid in vegetative recovery and soil stabilization.
- ? Provide management recommendations to assist in vegetative recovery, protection of site productivity and watershed stability, and species habitat protection and rehabilitation; emphasizing management strategies which provide for the natural regeneration and recovery of impacted areas.
- ? Develop monitoring strategies to assess revegetation and treatment results.

II. OBSERVATIONS

This report identifies and addresses known and potential impacts to vegetative resources within the Badger Fire on the Sheldon National Wildlife Refuge, Nevada.

The burned area consists of approximately 39,000 gross acres of Great Basin semi-arid uplands. Vegetative resources provide forage and cover for a variety of wildlife species, aesthetic values, watershed stability, and are biologically diverse examples of great basin plant communities in relatively good condition.

Findings and recommendations contained within this assessment are based upon information obtained from personal interviews with USFWS refuge staff, BAER team specialists, literature research, and field reviews of the fire area.

Reconnaissance of impacted areas was conducted utilizing aerial and ground survey methods. This assessment will attempt to capture the concerns expressed by the Sheldon-Hart Mountain National Wildlife Refuge Complex resource staff for the future management of these lands; will detail the known changes to vegetative resources; will discuss revegetation processes and future monitoring criteria; and will outline management considerations for recovery of the vegetative resources.

A. Background

The Badger Fire was ignited on August 23, 1999 as a lightning caused incident. Fueled by low humidities, extremely low fuel moisture and rolling to steep topography, erratic winds quickly pushed the fire which escaped initial attack response and burned uncontained for 2 days.

Vegetative resources were extensively impacted by this fire. As detailed later in this report, fire impacts ranged from partial to total alteration of all plant communities within many watersheds. Vegetative resources for wildlife, including both forage and thermal cover were partially or totally impacted for the short-term. No vegetative resources sustained long-term losses of productive capacity, nor were any site degrading impacts observed or expected, providing that reasonable mitigative measures are employed during the post-fire recovery period (3+ years).

Primary plant associations within and affected by the fire are detailed following. The terrain varies from long fairly flat valleys to sloping hillsides with moderate to steep slopes and rock outcrops with shallow steep gullies. The aspects of the hillsides, as well as the soil textures and depths, dictate the variability of the vegetative communities. The annual precipitation ranges from 8-15 inches per year.

The pre-fire vegetation classes within the fire area are documented by the USFWS Geographical Information system as follows:

Pre-fire Vegetation on the Badger Fire Area.

Vegetation Class	Ecological Group	Acres
mountain big sage	mountain shrubland	14,053
mountain mahogany	mountain shrubland	578
aspen	mountain shrubland	38
basin big sage	shrub-stepp	314
Wyoming big sage	shrub-stepp	11,860
low sage	shrub-stepp	6,625
riparian	riparian	165

B. Reconnaissance and Results

On September 6, 1999 , the BAER Team Vegetation Specialist met with the USFWS staff from the Sheldon-Hart Mountain National Wildlife Refuge Complex, to obtain baseline information pertaining to known impacts and information related to vegetation resources. Upon consultation with local staff, and after reviewing the burned areas within the fire perimeter, it has been determined that direct fire impacts have occurred to each of the plant communities within the fire area.

Aerial reconnaissance of the burned area was conducted on September 9 and 10 by BAER Team members. Burn intensity within the Badger fire was primarily observed to be low, with some small areas of moderate burn intensity. The fire burned in a mosaic fashion throughout much of the fire, but large continuous burned areas were observed.

Field reconnaissance of the fire was conducted on September 8 and 10 with the aide of local resource advisors from the U.S. Fish and Wildlife Service. Each plant association type was inspected to determine vegetative losses, effectiveness of suppression-related rehabilitation efforts, recovery potentials, and long-term rehabilitation needs. During the field inventories, observations were made of fire impacts to organic duff layers and live crown tissue on grass and shrub species. Observations were likewise made of adjacent areas outside of the fire for comparative purposes. Reconnaissance also included analysis of plant associations impacted by previous fires adjacent to the Badger fire area.

1. Vegetation

The Badger Fire burned through 39,000 gross acres of federally-owned lands under the jurisdiction of the US Fish and Wildlife Service entirely within the Sheldon National Wildlife Refuge. Due to variable fire behavior, fuel conditions, topography, weather and suppression tactics during the incident, varying amounts of vegetative cover was lost.

Vegetation resources were directly impacted by fire effects and suppression tactics used to control the fire. Documented impacts to vegetation resulted from:

- a. Construction of dozerline and handline adjacent to existing structures, roads, and on previously undisturbed sites.
- b. Impacts to native shrub, and grass species during line construction activities.
- c. Reduction of fuels and vegetation ahead of the fire-front by backfire operations.
- d. Vegetation losses due to direct consumption or fire intensity. Some mountain mahogany and quaking aspen were badly scorched by 50-100 foot flame lengths and many will probably die some time in the future.

Vegetation resources provide valuable wildlife forage and habitat, watershed protection, and makeup a visually pleasing landscape. Past management practices have shaped plant community composition, and the effects of this fire will have both positive and negative short and long-term effects.

Historical evidence indicates that fire has played an important role in the ecology of shrub-steppe and mountain shrub lands. Periodic fires historically occurred in these vegetation types (shrub-steppe: 25-50 years; mountain shrub lands: 15-25 years). Fires removed decadent shrub stands releasing associated grasses and forbs. Resprouting shrubs were often invigorated by removal of the above ground canopy. Sagebrush, on the other hand must reestablish from seed, taking longer than the sprouting species to reach pre-burn levels. Based upon a cursory review of literature and discussion with local resource advisors, it appears that the effects of Badger Fire were within normal bounds of the historic role of fire in this ecosystem type.

Pre and post-fire vegetation cover within the fire area is summarized as follows:

Post-fire Vegetation on the Badger Fire Area.

Vegetation Class	Acres Burned	Acres Unburned	Total Acres
mountain big sage	1293	97	1,390
mountain mahogany	10	1	11
aspen	38		38
basin big sage	275	39	314
Wyoming big sage	9716	2144	11,860
low sage	4889	1736	6,625
riparian	146	19	165

Burn intensity effects on soil organic matter and live crown tissue of grasses were observed to be low in all areas of the burn, including the areas in which vegetation was completely consumed. Although most shrubs were killed by fire, most grasses were observed to exhibit intact and live rootstock and crowns. Additionally, in many areas soil duff layers were not completely consumed by fire. All of these observations are indicative of a low intensity, fast-moving burn through light to moderate fuel types.

General literature research and past observations, indicate that seed banks within the soil are not usually severely impacted by low intensity fire. Most aspen and mountain mahogany groups within the burn were either killed outright by fire intensity, or the crown and cambium were scorched such that mortality is probable.

Observations of adjacent areas outside the fire indicate generally light pre-fire fuel loadings, and shrub communities at mid-seral stage with abundant inter-shrub herbaceous plants (primarily bunchgrasses). Very light densities and scattered distribution of cheatgrass was observed, and scattered or non-existent noxious weed species were noted. Neither cheatgrass nor other weed species were observed to be frequent enough to warrant modified land management strategies. Some areas of late-seral shrub communities exist, but these are limited in size. Within these late-seral sites, little herbaceous plant cover was noted.

Reconnaissance also included analysis of plant associations impacted by previous fires adjacent to the Badger fire area. One burn on Badger mountain occurred during 1994 under similar burning conditions. This burn which received no revegetation treatment, is currently a luxuriant grassland, with perennial bunch grasses predominating. Herbaceous ground cover often exceeds 35% and seldom less than 25%. Some seedling regeneration of shrubs (mountain big sagebrush, bitterbrush, and mountain mahogany) was observed, but these species are sparse in most areas. No resprouting of these shrubs was noted, except where initial mortality of the entire plant did not occur.

Short-term negative impacts from the loss of vegetation include visual quality degradation, increased non-native invasion potentials, bare soils, and reduced species diversity.

Vegetation Types Present within Badger Fire Boundaries

A mixture of sagebrush, grass and mountain mahogany vegetation types were burned in the fire. These vegetation types are common to the southern part of the High Desert Ecological Province (Anderson 1956, Bailey 1980). Plant communities within this area developed under periodic burning, and many have developed mechanisms to respond to fire (root sprouting, thick tap roots, fire stimulated germination, ect...). Historic fire return intervals of plant communities within the burned area range from 15-25 years in the higher elevation mountain big sagebrush type to between 25 and 50 years in the lower elevation Wyoming big sagebrush type (Miller and Rose 1999). However, since European settlement (1870-1890), the average time between fire events has increased dramatically. Many of the plant communities which were burned in the Badger Fire probably have not burned for over 90 years. This has allowed the accumulation of fuels and changed the plant community dynamics.

Seven major vegetation types have been identified within the boundary of the Badger Fire. Mountain big sagebrush, Wyoming big sagebrush, basin big sagebrush and low sagebrush were the dominant vegetation over a majority of the burned area. Other areas include, mountain mahogany, quaking aspen and riparian communities.

Mountain Big Sagebrush Plant Communities

Mountain big sagebrush (*Artemisia tridentata* ssp. *vaseyana*) occupies the highest elevation sagebrush type in the burned area. Antelope bitterbrush (*Purshia tridetata*) may occur as a co-dominant throughout this sagebrush type. Other shrubs commonly found are; green rabbitbrush (*Chrysothamnus viscidiflorus*), gray rabbitbrush (*Chrysothamnus nauseosus*), snowberry (*Symphoricarpos oreophilis*), gray horsebrush, (*Tetradymia canescens*), little-leaf horsebrush (*Tetradymia glabrata*), squaw currant (*Ribes cereum*). Herbaceous vegetation associated with mountain big sagebrush is fairly diverse. Dominant grasses are; Columbia needlegrass (*Stipa columbiana*), Idaho fescue (*Festuca idahoensis*), bluebunch wheatgrass (*Agropyron spicatum*), Thurber's needlegrass (*Stipa thruberiana*), pine bluegrass (*Poa scabrella*), and bottlebrush squirreltail (*Sitanion hystrix*). Cheatgrass (*Bromus tectorum*), a non-indigenous invading species, is a minor component of these plant communities. There is also a diverse perennial and annual forb component. Pale agoseris (*Agoseris glauca*), Long-leaf antennaria (*Antennaria microphylla*), bladderpod milkvetch

(*Astragalus lentiginosus*), curve-pod milkvetch (*Astragalus curvicaeus*), arrowleaf balsmroot, (*Balsamorhiza sagittata*), white paintbrush (*Castilleja glandulifera*), tapertip hawksbeard, (*Crepis acuminata*), strict buckwheat (*Eriogonum strictum*), Nevada lupine (*Lupinus nevadensis*), and woolly groundsel (*Senecio canus*) are the dominant perennial forbs. Common annual forbs are; littleflower collinsia (*Collinsia parviflora*), ambiguous cryptantha (*Cryptantha ambigua*), autumn willowweed (*Epilobium paniculatum*), microsteris (*Microsteris gracilis*), and ground smoke (*Gayophytum racemosum*). Many of these perennial and annual forbs are important food plants for a variety of wildlife found on the refuge.

Sagebrush is a non-sprouting shrub and must revegetate the site from seed. Dispersal distance of sagebrush seed is often less than 1 meter from the edge of the sagebrush canopy. Reestablishment of sagebrush within large continuous burned blocks will be slow because of the distribution distance. The other shrubs present in this sagebrush type will resprout from underground buds. Green and gray rabbitbrush, snowberry, and gray horsebrush will readily resprout following removal of their aboveground canopy. Resprouting of antelope bitterbrush is dependent on vigor and age of plant. Older, decadent plants usually cannot be expected to resprout following burning, and bitterbrush can be potentially lost from the plant community if the majority of the plants are older and decadent. Most of the perennial grasses will respond favorably to fire. In general the coarse-leaved grasses will respond more favorably to burning. Columbia needlegrass, bottlebrush squirreltail, bluebunch wheatgrass, and pine bluegrass have this coarse leaf growth form. Grasses with fine leaves, such as Idaho fescue and Thurber's needlegrass will most often not respond favorably to burning. Areas of high fire intensity will damage fine-leaved species. Most perennial forbs in this sagebrush type will respond favorably to burning. Species with thick taproots or underground tubers will not be damaged by burning. Tapertip hawksbeard, most milkvetch species, Nevada lupine, pale agoseris have large taproots. Forbs with low growing growth forms will often be damaged by fire. Plants from this sagebrush type which exhibit this growth form are buckwheat species, mat forming phloxes (*Phlox hoodii*), and Oregon sunshine (*Eriophyllum lanatum*). Annual forb response to burning will in most cases be positive, but their response will be closely linked to current climatic conditions.

Wyoming Big Sagebrush Plant Communities

Wyoming big sagebrush (*Artemisia tridentata* ssp. *wyomingensis*) occurs at the drier end of the big sagebrush distribution on the refuge. Overall productivity and diversity is lower than in the mountain big sagebrush because of the drier conditions and shallower soils. Wyoming big sagebrush is the dominant shrub, with green and gray rabbitbrush approaching co-dominance in some areas. Gray horsebrush is also present, as is spiny hopsage (*Grayia spinosa*) on the drier sites. Thurber's needlegrass, bluebunch wheatgrass, and Sandberg's bluegrass (*Poa sandbergii*) are the dominant grasses. Bottlebrush squirreltail, prairie junegrass (*Koeleria cristata*), and Indian ricegrass (*Oryzopsis hymenoides*) also occur in these communities. Cheatgrass can potentially be a large component of this sagebrush type. However, the level to which cheatgrass dominates following fire in this vegetation type depends on pre-burn levels. Perennial and annual forb composition is similar to the mountain big sagebrush type, but cover and density will be lower due to the drier conditions. Tapertip hawksbeard, pale agoseris, Hood's phlox, tailcup lupine (*Lupinus cadatus*), thread-leaf daisy (*Erigeron filifolius*) line-leaf daisy (*Erigeron linearis*), granite gilia (*Leptidactylon pungens*), western groundsel (*Senecio integerrimus*), curve-pod milkvetch, long-leaf phlox (*Phlox longifolia*) and low pussytoes (*Antennaria dimorpha*) are the common perennial forbs. Littleflower collinsia, microsteris, autumn willowweed, and groundsmoke are native annual forbs common to Wyoming big sagebrush plant communities. There are also a number of introduced annual forbs that are common to Wyoming big sagebrush, but rare in mountain big sagebrush; desert alyssum (*Alyssum desertorum*), pale alyssum (*Alyssum alyssoides*), pinnate tansy mustard (*Descurainia pinnata*), and tumble mustard (*Sisymbrium altissimum*).

Wyoming big sagebrush, like mountain big sagebrush, is killed by fire. This species must reestablish from seed. Seeds disperse less than 1 meter from the parent plant. Reestablishment within large burned blocks will take time because of the dispersal distance. Other shrubs within this vegetation type will resprout following burning. If disturbance was high prior to burning, green and/or gray

rabbitbrush may dominate the shrub component following burning. Bluebunch wheatgrass and bottlebrush squirreltail are coarse-leaved grasses and should respond favorably to burning. Areas dominated by Thurber's needlegrass or with a significant component of Idaho fescue could see post fire declines in these species, especially in areas that experienced high fire intensity. Response of cheatgrass following fire will be dependent on pre-burn densities. In areas with high pre-burn cheatgrass densities, the probability of cheatgrass dominating the post-burn plant community is greater than areas where cheatgrass density was low prior to burning. Post-burn management is also critical. Disturbance should be kept to a minimum following burning if cheatgrass is present in moderate to high densities. Deep rooted perennial forbs, such as, hawksbeard, groundsel, milkvetch, and lupine should respond favorably to burning. Long-leaf phlox is a common rhizomatous perennial forb present in these plant communities. In general, rhizomatous plants will respond favorably to burning. The low growing, mat-forming perennials, Hood's phlox and low pussytoes will be damaged by burning. These plants elevate their growing points above the ground surface where they can be exposed to fairly high temperatures during a fire. Initial plant communities after burning will likely be dominated by annual forbs for 3 to 5 years. At which point perennial bunchgrasses and forbs should begin to dominate. A rule of thumb is, one perennial plant per 10 ft² should be sufficient to revegetate a site.

Basin Big Sagebrush Plant Communities

Basin big sagebrush (*Artemisia tridentata* ssp. *tridentata*) occupies the deeper soil areas often found in valley bottoms. Many of these areas were plowed in the early to mid 1900s. These areas were also used as holding areas for domestic livestock because they are often close to a water source. Green rabbitbrush is common and will be a codominant in areas that have been disturbed. Basin wildrye (*Elymus cinereus*) historically was the dominant perennial grass species and may have been the dominant plant prior to disturbance earlier in this century. Other grasses common to these plant communities are; bottlebrush squirreltail, alkali saltgrass (*Distichlis stricta*), and western wheatgrass (*Agropyron smithii*). Perennial forbs are similar to the other sagebrush types. In areas where disturbance has occurred, annuals will dominate the forb community. Booth's evening primrose (*Camissonia boothii*), blazingstar (*Mentzelia albicaulis*), and prickly lettuce (*Lactuca serriola*) are also present in addition to the annual forbs present in the other big sagebrush types.

Basin big sagebrush is readily killed by fire, but rabbitbrush will resprout following removal of the aboveground portion of the plant. In areas where prior disturbance has created a codominance of basin big sagebrush and rabbitbrush, rabbitbrush will dominate the post-fire plant community. Basin wildrye and bottlebrush squirreltail will respond favorably to burning because of their coarse leaved growth form. Alkali saltgrass and western wheatgrass also respond favorably to burning because of their rhizomatous growth form. Annual forbs will respond strongly to burning and their post-fire dominance is related to pre-fire abundance.

Low Sagebrush Plant Communities

Low sagebrush (*Artemisia arbuscula*) occupies shallow soil areas, often with perched water tables in the spring. Low sagebrush is the dominant shrub. Wyoming big sagebrush, mountain big sagebrush and green rabbitbrush do occur occasionally on deeper soil pockets within this plant community. Idaho fescue and Sandberg's bluegrass are the dominant grasses. Bluebunch wheatgrass, bottlebrush squirreltail, and Thurber's needlegrass are also common. Hood's phlox, Pursh's milkvetch (*Astragalus purshii*), arcane milkvetch (*Astragalus obscurus*), pale agoseris, threadleaf daisy, Oregon sunshine, mat eriogonum (*eriogonum caespitosum*) are the common perennial forbs. Littleflower collinsia, microsteris, groundsmoke, and autumn willowweed are the common annual forbs.

Low sagebrush is killed by fire. Post-fire plant communities will often be dominated by herbaceous plants. Little is known about the community level response of low sagebrush stands. These sites have been thought to be fire safe. However, recent studies by Miller and Rose (1999) indicate that fire probably did play a role in these plant communities, but fire return intervals were longer than the more productive big sagebrush sites. Sandberg's bluegrass, bluebunch wheatgrass, and bottlebrush squirreltail will respond favorably to burning. Sandberg's bluegrass is a low growing perennial

bunchgrass. It begins its growth early in the spring and usually is one of the first plants to go dormant in the summer. Burning often occurs after the plant has gone dormant in the summer, reducing the impact of fire. Idaho fescue and Thurber's needlegrass have fine leaves and therefore could be damaged by fire. However, severe damage by burning usually only occurs if fire intensity is high. Low sagebrush plant communities often have a large percentage of mat-forming perennial forbs. These forbs can be severely damaged by burning. Mat eriogonum, Hood's phlox, and Oregon sunshine are mat-forming perennial forbs. Pale agoseris is a deep rooted perennial forb and is often enhanced by burning. The annual forbs present are also favored by burning. Little is known about the effects of burning in low sagebrush plant communities, but a current study on the Sheldon National Wildlife Refuge will continue to monitor plant response in these communities.

Mountain Mahogany plant community

Mountain mahogany (*Cercocarpus ledifolius*) is found at higher elevations intermixed with the mountain big sagebrush plant communities. It occurs on rocky soils and ridge tops and in areas where snow drifts persist into the spring. Mountain mahogany will form open stands with mountain big sagebrush, antelope bitterbrush and snowberry in the understory, or form fairly dense woodlands where shrubs are excluded from the understory and only grasses and forbs grow. Grasses and forbs found in this community type are similar to the adjacent mountain big sagebrush plant communities.

Because of their location on rockier soils and ridgetops, these plant communities probably did not burn with the regularity of the adjacent mountain big sagebrush. However, when they do burn these stands usually burn with high intensity, especially in the closed stands. Most plants are killed because of the high intensity of the fire in these locations. Mountain mahogany is killed by burning and must regenerate from seed. Annual plants are the most common plant community following a fire in mountain mahogany. Littleflower collinsia, groundsmoke, microsteris, and obscure cryptantha (*Cryptantha ambigua*) are common annual forbs found following a fire.

Aspen Pockets

There are small pockets of quaking aspen (*Populus tremuloides*) found throughout the area. These pockets are found in wet areas where ground water comes to the surface creating a seep or a spring. These pocket areas often less than 1 hectare in size, but provide important habitat for many neotropical migrant birds, small mammals and nesting for raptors. Snowberry, chokecherry (*Prunus virginiana*), and wild rose (*Rosa woodsii*) can also often be found growing below the aspen overstory.

Aspen is a clonal species and depends on fire for regeneration of stands. Seedling vigor of aspen is very low and new seedlings often do not survive the summer drought common to this part of the Nevada. Removal of the overstory results in release of axillary buds on the roots (suckering). Suckering following burning can be tremendous, producing thousands of stems per hectare.

Riparian Communities

There are two main riparian communities within the perimeter of the Badger Fire: willow dominated (*Salix* sp.), and sedge dominated (*Carex* sp.) The willow dominated communities occurred primarily along stream banks. The sedge types occurred in broad flat areas that were subject to frequent inundation and high water tables.

Willow communities commonly had a variety of willow species; whiplash willow (*Salix lasiandra*), coyote willow (*Salix melanopsis*), and Scouler's willow (*Salix scouleriana*). Wild rose (*Rosa* sp.) and golden current (*Ribes aureum*) can be subdominant plant associates. Sedges, rushes (*Juncus* sp.) and a variety of forbs form the herbaceous vegetation. The sedge meadows are dominated by sedges and rushes. Vegetation in the sedge meadow is primarily rhizomatous grasses and forbs. Woolly sedge (*Carex lanuginosa*), Nebraska sedge (*Carex nebrascensis*), annual hairgrass (*Deschampsia danthonioides*), baltic rush (*Juncus balticus*) and bentgrass (*Agrostis stolonifera*) are common grass and grasslike plants found in these communities. The forb community is very diverse in these riparian communities. Dominant forbs are curly dock (*Rumex crispus*), biannual sagebrush (*Artemisia bienis*), lance-leaf haplopappus (*Haplopappus lanceolatus*), and arrow-leaf (*Tirglochin concinna*).

Fire may not have played much of a role in the development of these plant communities, but the response to burning can be tremendous because of the deep soil and abundant soil moisture. All shrub readily sprout following removal of aboveground portions. Most grasses and forbs found are rhizomatous and respond positively to burning.

Post Fire Shrub Response		
Species	Revegetation Mechanism	General Response to Burning
Mountain Big Sagebrush	Seed	-
Wyoming Big Sagebrush	Seed	-
Basin Big Sagebrush	Seed	-
Antelope Bitterbrush	Seed (Sprouting) ^a	-(+)
Mountain Mahogany	Seed	-
Green Rabbitbrush	Sprouting	+
Grey Rabbitbrush	Sprouting	+
Snowberry	Sprouting	+
Gray Horse	Sprouting	+
Quaking Aspen	Sprouting	+

^a Mechanism and response depend on plant age, plant vigor, or ecotype

Threatened, Endangered or Sensitive Plants Affected by the Badger Fire

Emergency consultation was held with the U.S. Fish and Wildlife Service (USFWS) on threatened and endangered (T&E) plant species known to occur within the Badger fire area. Research was conducted on species currently listed by the USFWS to verify that no T&E species occurred within the fire area. Contacts were made with local experts to determine if additional sensitive species of concern were potentially affected by the fire and suppression actions.

Based upon a recent publication "Rare Plant Survey of the Sheldon National Wildlife Refuge, The Nature Conservancy and the USFWS, January 1996", and consultation with USFWS personnel on September 8, 1999 (Sheldon NWR manager), the following list of rare plants found on the Sheldon NWR was developed. At that time it was confirmed that the list contained no Federally listed Threatened and Endangered plant species but did reference the following sensitive state "Species of Concern".

Species	Status	County found (within Sheldon NWR only)
<i>Astragalus alvordensis</i>	SC (Species of Concern, Oregon state list)	Humboldt County, NV
<i>Dimeresia howellii</i>	SC (Species of Concern, Idaho state list)	Humboldt County, NV Washoe County, NV
<i>Eriogonum ochrocephalum</i> var. <i>Alexandrae</i>	SC (Species of Concern, California state list)	Humboldt County, NV Washoe County, NV
<i>Hackelia ophiobia</i>	SC (Species of Concern, Oregon and Idaho state list)	Humboldt County, NV
<i>Nemacladus rigidus</i>	SC (Species of Concern, Oregon and Idaho state list)	Humboldt County, NV Washoe County, NV
<i>Silene scaposa</i> var. <i>lobata</i>	SC (Species of Concern, Idaho state list)	Humboldt County, NV

All of the above listed plants have been considered to be geographically rare, but are too common to be of concern for federal listing, except *Hackelia ophiobia*. This species is considered rare, but has not been federally-listed.

Hackelia ophiobia (Owyhee forget-me-not), is only found within Sheldon NWR on north-facing slopes of Thousand Creek Gorge. This location is well outside of the fire area. The incident command post base camp is located on a level bench within the Thousand Creek drainage. However, it is doubtful that impacts resulted from base camp development, since the camp is well outside of the gorge on level topography which was once a plowed agricultural site.

The complete county listing of threatened and endangered and sensitive species, compiled by USFWS-Biological Services Office, Reno, NV, is included in the appendix. No species referenced on the list is known to be found within the refuge. Based upon this information, no monitoring or mitigation for Threatened and Endangered plant species is necessary during Badger Fire rehabilitation activities.

2. Revegetation

The decision to revegetate burn areas will be based upon the following criteria:

- Watershed stability (dozer lines, incident base camp)
- Prevent further degradation of critical wildlife habitat (selected areas: shrub species)
- Prevent further degradation of native grasses (on sites occupied pre-fire by decadent shrub stands) by supplemental reseeding

Throughout most of the burn area, low intensity fire did not severely impact seed banks within the soil or injure the root crowns of most native grass species. In most areas, root crowns are still visible and regrowth will occur during the next growing season. In many areas, fire intensities were high enough to

consume or kill many shrub species such as sage (all species), bitterbrush, rabbit brush and mountain mahogany. Many of these species are critical for wildlife forage and other habitat needs.

Based on consultation and recommendations of local resource advisors and the BAER vegetation specialist, it was determined that the following revegetation treatments should be implemented to assist in the timely rehabilitation of the vegetation resources on the Badger fire. These treatments are recommended both for the purposes of watershed stabilization and revegetation and for the reestablishment of critical wildlife habitat.

Broadcast grass seeding followed by dragging

This treatment is recommended for implementation on all of the suppression-related dozer lines. The recommended treatment is to use a broadcast seeder mounted on an ATV (four-trac vehicle), followed by dragging of a chain or fence section to incorporate the seed into the soil. Approximately 15 miles of this treatment is proposed. This treatment is also proposed for approximately 200 acres of selected loamy bottomland range sites; which prior to burning supported decadent shrub stands dominated by rabbitbrush species with minimal herbaceous plants cover. Seeding should be completed as soon as possible in order to accomplish these tasks prior to winter snowfall. Seed is recommended to be applied at the rates shown below:

Grass Seed Mix for Dozer Line Revegetation (Broadcast Seed at the rate of 50 PLS/sq. ft.)		
Species	Mix Ratio	Pounds/Acre (PLS*)
Bluebunch Wheatgrass	20%	3.1
Mountain Brome	15%	3.6
Canby Bluegrass	30%	0.7
Big Bluegrass	20%	0.5
Western Wheatgrass	15%	3.0
total pounds		10.9

* all seed weights shown on a pure live seed (PLS) basis. Bulk seed will require more actual weight.

Grass Seed Mix for Loamy Bottom Sites Revegetation (Broadcast Seed at the rate of 50 PLS/sq. ft.)		
Species	Mix Ratio	Pounds/Acre (PLS*)
Basin Wildrye	15%	2.5
Western Wheatgrass	40%	7.9
Bottlebrush Squirreltail	5%	1.2
Bluebunch Wheatgrass	20%	3.1
Sandberg's Bluegrass	20%	3.6
total pounds		18.3

* all seed weights shown on a pure live seed (PLS) basis. Bulk seed will require more actual weight.

Discing, followed by reseeding using a rangeland drill

This treatment is recommended to rehabilitate the incident command post /base camp. Soils have been compacted at this site and will require discing prior to revegetation. Approximately 2 acres are proposed for this treatment. Seeding should be completed as soon as possible in order to accomplish these tasks prior to winter snowfall. It is recommended that seed be applied at the rates shown below:

Grass Seed Mix for Rehabilitation of Incident Command Post Base Camp (Drill Seed at the rate of 25 PLS/sq ft.)		
Species	Mix Ratio	Pounds/Acre (PLS*)
Basin Wildrye	45%	7.5
Bottlebrush Squirreltail	5%	1.0
Western Wheatgrass	50%	12.1
Four-winged Saltbush	additional to mix	1.0
total pounds		21.6

* all seed weights shown on a pure live seed (PLS) basis. Bulk seed will require more actual weight.

Broadcast shrub seeding followed by dragging

This treatment is recommended for implementation on selected sites to reestablish critical wildlife habitat. Approximately 200 acres of seeded strips and islands of Wyoming big sage is proposed to be established in areas of primary sage grouse habitat. Approximately 200 acres of seeded strips and islands of antelope bitterbrush is proposed to be established in areas of primary antelope and mule deer habitat. Approximately 25 acres of mountain mahogany is proposed to be seeded in small groups and stands on appropriate mountain sites for wildlife browse and thermal cover. Shrub seeds must be bulked with a suitable bulk filler (ie: rice hulls) in order to be broadcast at low rates of seed per acre. Bulk filler should be mixed at the rate of 5 lbs. filler to 1 lb. pure live seed. Seeding should be completed as soon as possible in order to accomplish these tasks prior to winter snowfall. Seed is recommended to be applied at the rates shown below:

Wyoming Big Sagebrush: Broadcast seed with bulk filler at the rate of 2 pounds actual seed/acre

Bitterbrush: Broadcast seed with bulk filler at the rate of 2 pounds actual seed/acre

Mountain Mahogany: Broadcast seed with bulk filler at the rate of 2 pounds actual seed/acre

For the purpose of developing budgeted costs for the seeding treatments, seed costs were solicited from different major vendors. It should be noted that some species may be in short supply during this season due to an abnormally high fire rehabilitation demand. Some species may need to be substituted. It is anticipated that all necessary seed will be available within the 3 year EFR window. Additional site preparation may be required and success may be lessened if seeding is delayed until year 2 or 3.

3. Seeding Effectiveness Monitoring

It is very critical that monitoring be conducted not only on proposed treatment areas, but on non-treated areas as well. The monitoring in unseeded areas will give managers an example of what could have happened without seeding. The National Research Council proposed the concept of "rangeland health" as a common denominator for the description of the nation's rangelands. Applying the concepts of rangeland health and thresholds to cheatgrass infested rangelands would yield valuable information for science based management decisions. Little research has been done to identify the

thresholds of cheatgrass dominance whereby a disruption in ecological processes, native plant composition or soil stability occurs. Young and Evans (1978) reported that native perennial plant densities of 2.5 plants per square meter were adequate to prevent cheatgrass dominance if the shrub steppe community was removed. Monitoring data, using the BLM techniques such as “freqdens” or other models (as specified in N-1d) will provide managers in this region with valuable data and applied research on treatment success and failures, as well as how certain plant communities respond to post fire effects. This information will also assist managers in providing baseline criteria for post fire wildlife management.

4. Structural Range Improvements

Range pasture fences, spring exclosure fencing, corrals, and shipping pens were all located within the fire area. No inventory of damages was conducted, since livestock grazing is no longer permitted within the Sheldon National Wildlife Refuge. Most fencing was constructed of metal posts with wire/rock fill cribs at corners and stretch points. As a result, most fencing remains intact and serviceable post fire. Some unused wooden corrals and shipping pens were damaged or destroyed. A few short sections of fence with wood posts were severely damaged, and pose a safety hazard (approx. 3 miles total). These sections of fencing should be removed as part of the EFR program.

5. Noxious Weeds

Few noxious weeds were known to inhabit the Badger fire area pre-fire. Individuals, if any are infrequent and not widespread. Cheatgrass is an undesirable non-indigenous plant, however it was not densely distributed. The recent wildfire does exacerbate the probability that the very competitive noxious weeds and other undesirable plants could become more widespread, since they have a prepared seed bed in which to grow, will have reduced competition from native vegetation, and most have the ability to begin germination after the first fall rains. This possibility is not judged to be very likely in this case however, since abundant perennial bunchgrasses which were not damaged by the fire will also begin new growth at the same time. Other sites which are not expected to revegetate naturally are proposed to be seeded. For these reasons, no noxious weed mitigation is deemed to be necessary at this time. It is recommended that weeds be inventoried as part of the general revegetation monitoring process. If any weed concerns are noted, then supplemental EFR funding to mitigate the problem is advised. Once exotic weeds become established it is extremely difficult to eradicate them and restore the native communities that have been displaced.

6. Grazing -Wild Horses

Domestic livestock grazing is no longer permitted anywhere within the refuge boundaries. There are an estimated 800+ wild horses which inhabit the Sheldon National Wildlife Refuge. To facilitate rehabilitation of all sites, seeded and unseeded, wild horse exclusion from the fire area will be imperative for vegetative recovery. During our field assessments, horses were extensively observed within the burned area, primarily utilizing unburned patches. Removal of horses which are impacting the burn area will facilitate the following management goals:

- Remove grazing/browsing competition between wild horses and wildlife for scarce forage. The enabling legislation establishing the refuge specifically designates the purpose is to provide forage for pronghorn antelope and other wildlife species.
- Protect and stabilize soils by reducing grazing animals in key areas and seeded areas, allowing plants to establish and develop effective root depths and root reserves.
- Reduce duration of grazing to keep a healthy and diverse plant community while utilizing the range forage for wildlife habitat.
- Manage herbivores to promote a healthy ecosystem and allow natural fire to assume its role in land management.

- Develop improved plant community management (seral stages, range condition, cheatgrass and noxious weed invasion) integrating natural fire, prescribed fire, and wildlife management to meet land management objectives.

III. RECOMMENDATIONS

A. Management (Specification related)

1. Seeding:

- a. **Reseed Burned-Over Range Using Broadcast/Dragging Methods (N-1a):**
200 acres of grass seeding in selected loamy bottom sites; to ensure revegetation with desirable species and limit establishment of noxious weeds.
- b. **Reseed Burned-Over Browse, Using Broadcast/Dragging Methods (N-1b):** 225 acres of shrub seeding on selected sites; to ensure revegetation with desirable browse species in critical wildlife habitat (bitter brush/ mountain. mahogany).
- c. **Reseed Burned-Over Habitat, Using Broadcast/Dragging Methods (N-1c):** 200 acres of shrub seeding on selected sites; to ensure revegetation with critical habitat species in sage grouse habitat (Wyoming big sage).
- d. **Reseed Incident Command Post/Base Camp Area, Using Discing Followed By Rangeland Drill Methods (W- 3):** Approximately 2+ acres; to revegetate site impacted by fire suppression.
- e. **Reseed Dozer Suppression Lines, Using Broadcast/Dragging Methods (W- 1b):**
Approximately 15 miles of dozerline; to revegetate site impacted by fire suppression.

2. Resource Protection and Public Safety Acts (S-1):

Remove damaged preexisting wood/wire fence; Approximately 3 miles.

3. Revegetation Monitoring:

a. Revegetation Monitoring (N-1d)

Seeding Success of Treated Areas, Natural Recovery of Unseeded Areas, Noxious Weeds Dispersal:

Conduct Surveys on all burned areas within the fire annually over a 3 year period, stratified by treated and untreated sites. All areas should be systematically sampled at intensities appropriate by strata type, using a permanent plot monitoring method which measures canopy cover, ground cover, species composition and vigor of plants. It is critical that monitoring be conducted on an annual basis, so that supplemental funding for reseeding may be requested during the three year EFR period if natural or seeded vegetation fails to establish at sufficient density (25% + cover density of perennial species).

Establish transects in moderate to high burn intensity areas for each plant community type within the burn. Site selections should be made by agency representatives. Transects will be established and methodologies designed to determine revegetation effectiveness, which can be evaluated by utilizing the following criteria:

- 1) A minimum seedling establishment of 9-15 seeded plants per square foot. Sampling should also determine species composition, root depth and area, plant height and vigor.
- 2) Count grass bunches per square foot: (i.e. Seeded species + surviving species). Approximately 2.5 perennial grass bunches/square foot is adequate.
- 3) Estimate root mass per square ft. Pull a few plants up from soil surface on a representative area. Measure diameter of root wad. Utilizing the following formula, revegetation success may be measured.

Example: Where root mass is equal to 2" diameter:

$$\frac{2" \times 3.1416}{144 \text{ sq.in}} = \frac{6.2832}{144} = .0436 \text{ sq.ft.} \times 10 \text{ plots} = 0.44 \text{ sq. ft.}$$

Estimate effective root cover area due to grasses and other sources.

- 4) Sampling methodologies shall represent all plant communities, all aspects, and slope variations support with photographs on data records.
- 5) Observations should be documented to record other factors such as surface erosion, animal browsing, etc.
- 6) A final report shall be published that documents sampling techniques, areas sampled, and summary of findings.

Monitoring is also proposed to determine if the existing noxious weed populations increase or decrease in size after treatment. Monitoring plots, with locations coincidental with the general vegetation monitoring plots, will be established using GPS and topographic maps. Monitoring will assist in determining any needs for supplemental funding for noxious weed control and prioritizing future weed control efforts with EFR funding. Because there is low probability that noxious weeds will increase in the burned areas and spread onto adjacent unburned areas, immediate control is not recommended but monitoring is critical to determine needs for future EFR weed control funding.

Inventory will be conducted at existing noxious weed locations inside the burn areas and in areas with a high potential for weed invasion—road and dozer lines, springs and riparian areas downhill/stream of existing weed populations, and any areas in sagebrush/grasslands where noxious weeds were burned by the wildfires. Inventory, in conjunction with monitoring, will help to determine the extent of noxious weed invasion inside the burn areas and what and the extent of control measures need to be implemented with EFR.

A monitoring method which measures canopy cover, ground cover, and production by life form of specific noxious weed species is proposed. The short- nested microplot method (Described in the Noxious Weed Management Short Course, Bozeman, Montana), is the recommended method. The BLM Manual, Inventory of Plant Populations is another source of monitoring methods. Permanent photo plots are to be established at any discovered noxious weed populations.

- b. Revegetation Monitoring- Aspen Groups (N-3b):** Monitoring regeneration of aspen pockets is included within this specification. Aspen is a rare species in this landscape and it provides valuable habitat adjacent to seeps; it has been theorized by ecologists that these pockets may be relics of long-past wider distributions (Pleistocene-era). As such, these small pockets are ecologically significant. It may be necessary to temporarily fence aspen groups to protect from browsing during the reestablishment period. Approximately 300 shoots/acre of vigorous unbrowsed plants are necessary to reestablish the aspen clone. Two seasons of browsing damage may result in mortality of the clone, since the pre-fire condition was observed to be

approaching decadence. The need for protection should be evaluated at the end of the first growing season post-fire, and supplemental EFR funding be requested for this action, if necessary.

c. Procure Color Aerial Photographs for Monitoring (N-1e): Procure color aerial photographs of the fire area (1 to 12,000 scale; stereographic overlap) for use as a baseline for monitoring rehabilitation.

- 4. Wild Horse Gather From Burned Area (N-2a):** Conduct round-up of wild horses within and adjacent to the Badger fire, for the remainder of the fire rehabilitation period. Horses will be gathered by private contractors according to Agency policy. USFWS refuge staff and BAER Team Specialists recommended that in order for watershed and vegetation resources to recover from the wildfires, removal of the wild horses is necessary to ensure success of revegetation efforts (see Reseeding of Burned Over Range, W-1a,b; Dozerline and Disturbed Areas, W-8a,b;), as well as natural revegetation.

Removal of wild horses is permitted based upon protocol detailed in a NEPA document on file with the USFWS (Sheldon Horse Management Plan, Environmental Impact Assessment, November 1977). Under this protocol, any wild "mustang-like" horses must be returned to the range, but all other captured animals will be sold at public auction by the contractor. The Wild Free-Roaming Horses and Burro Act (P.L. 92-195) does not apply to lands managed within the National Wildlife Refuge System, therefore the USFWS is not required to engage in an "adopt a horse" program like that conducted by USDI-BLM. The removal actions are however subject to the provisions of P.L. 86-234 (Sept. 8, 1959) which prohibits the use of aircraft or motor vehicles for wild horse capture.

B. Management (non-specification related)

Rangeland vegetation:

1. Establish a vegetation database on current range data, plant communities, and their ecological health in GIS to assist future management in assessment, rehabilitation and restoration.
2. Establish vegetative objectives for wildlife management and baseline criteria.
3. Develop a long-term strategic vegetation/prescribed fire management plan which addresses desired ecological conditions and functional dynamics by vegetation type. Utilize interval burning and other management tools to create a mosaic of plant communities and successional stages throughout the refuge. Implement a systematic prescribed fire program to meet these objectives.
4. Enhance public outreach programs by utilizing volunteer organizations to learn about and be involved with rehabilitation efforts. Reach out to conservation groups and grow wildlife shrubs in greenhouse nurseries and plant containerized seedlings.
5. Use public information releases to promote rehabilitation efforts and improve community relationships.
6. Implement a periodic survey and management program for noxious weeds on a refuge-wide basis. A multi-agency/interest group should be in place to address noxious weed management on a regional basis.

IV. CONSULTATIONS

USDI, Fish and Wildlife Service, Sheldon-Hart Mountain National Wildlife Refuge Complex

Mark Strong

Sheldon NWR manager

Andrew Goheen prescribed fire specialist
Steve Clay deputy project manager
Christopher Farinetti fire management officer

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**DEPARTMENT OF INTERIOR
BURNED AREA EMERGENCY REHABILITATION TEAM**

Badger Fire

CULTURAL RESOURCES ASSESSMENT

I. ISSUES

- ? Occurrence of prehistoric and historic archaeological resources, historic structures, and historic landscapes within the burned area and fire suppression area;
- ? Potential for impacts to cultural properties consequent to the wildfire, fire suppression and rehabilitation efforts;
- ? Assessment of fire and fire suppression effects on previously documented cultural resources within the Badger Fire;
- ? Recommendation of appropriate evaluation, monitoring or preservation treatments for cultural resources affected by fire, suppression, or rehabilitation activities; and
- ? Recommendation of treatments to cultural resources threatened by the opportunities created by the fire, including the easy visibility of burned over sites to looters and trampling of sites at springs and other favorable areas by wild horses.
- ? Need for consultation with appropriate Native American tribes.
- ? Avoidance or mitigation of adverse effects to cultural resources from suppression and rehabilitation activities.

II. BACKGROUND INFORMATION

The following information is intended to be a cursory overview of present knowledge of cultural occupation at the Sheldon NWR and is not represented as a comprehensive summary of knowledge and conditions in the Badger Fire area. Its purpose is to provide a context whereby the fire, suppression activity, post-suppression inventory, and recommended cultural resource prescriptions may be considered.

Although Sheldon National Wildlife Refuge (NWR) is well known among local agencies and the public to contain abundant cultural resources, little formal archaeological work has been conducted on the Refuge. The following information relies primarily on Elston and Earl (1979) and the references therein.

Prehistory: In their report, Elston and Earl summarized what archaeological and historic research has been done in and adjacent to the Sheldon NWR. Since then, the Refuge has hosted only a few small cultural resource surveys tied to land altering projects. Most specific to the Badger Fire was a survey of select springs by Bensen ((1978). Additional information on the regional archaeology and culture history can be gleaned from cultural resource reports for areas adjacent to the refuge including C. Fowler 1989, D. Fowler 1993, and Leach (1988).

The Badger Fire occurred in what has been referred to as the High Rock Country of the northwestern Great Basin. Human use of the area, including that portion now called Sheldon National Wildlife Refuge, began at least 12,000 years ago. This occupation is marked by the distinctive Clovis-style spear points often found near the margins of pluvial lakes and playas. The earliest radiocarbon dates documenting use of the refuge were obtained from Last Supper Cave, located just north of the Badger Fire. Dates and archaeological remains from this cave indicate that a thriving population subsisted on large game,

waterfowl and freshwater shellfish. This focus on lakes fits into the Western Lakes Pluvial Tradition of Bedwell (1973). After a population decline during the “altithermal” (dating from about 6000 to 4000 B.C.), the area hosted increasingly denser native populations until the arrival of Euro-American settlers in the 19th century. Until this contact, the Native Americans focused much of their residential activities near springs and other permanent water sources (see especially Fagan 1974). Winter villages were established at lower elevations and the uplands were exploited for their seed, roots, and other resources during the warmer months. Hunting occurred in both areas. See Layton (1970), Layton and Davis (n.d.), Davis (1978), Layton and Thomas (1979), and Layton (1978) for a complete archaeological chronology of this area.

Ethnography: This pattern of winter aggregation in villages, and summer dispersal of families to gather resources as they ripened or otherwise became available continued through the contact period and is well documented for the Northern Paiute who occupied this area in the 19th century. Known as *Aga'i'paninadokada* (“fish lake eaters) or *Moado'kado* (wild onion eaters), these bands sustained serious social and technological disruption with the arrival of Euro-American settlers and their horses, disease, and overpowering economy and culture. At present, the Northern Paiute who used the Sheldon area reside in southern Oregon and Northern Nevada, especially on the Summit Lake Indian Reservation, just south of Sheldon NWR. Elston and Earl (1979) indicate the Kiduto Kado Paiute who wintered in Surprise Valley and possibly the Tososo'odo band who were north of the Refuge may also have used this area. The Fort McDermitt Reservation, Nevada, the Fort Bidwell Reservation, California, and the Cedarville Rancheria, California may also have ties to this area.

Historic Contact: The Indian-Euro-American contact in this area occurred later than in other areas, in part because this area of the Great Basin was bypassed by the fur companies. Direct contact in this area probably came in the 1840's. At this time, the horse was seen as a food source by some bands while others saw them as transportation and raids to acquire them led to escalating conflict between the native and emigrant populations. Acquisition of the horse saw the High Rock Country become a hideout for some non-resident bands while others continued to practice their previous life ways. In reaction to the developing clashes between Indian and immigrant populations, the U.S. Army built several posts in the general area between 1860 and 1865 to protect settlers and travelers during the Indian Wars of the 1860's.

History: While major emigrant routes bypassed that would become the Sheldon NWR, the first topographical mapping of the area was done in 1864 and 1866 during the search for better wagon routes. The first direct occupation in the Sheldon NWR area in the late 1860's was associated with ranching. Many of these small-scale operations failed during the winter of 1880-81 and were bought out by Henry Miller of the Miller and Lux firm. While less is known about sheep grazing, it is thought they were run in the area shortly after cattle were introduced. Most early sheep operations, however, were transient and historic information on this industry is scarce. However, by the teens, the Dufferena brothers began buying out small home and ranch steads to graze sheep and by the late 1920's, they were the largest landowners in the area. Both sheep and cattle ranching have left traces of their presence in the Sheldon NWR and several brief reports on this are being distributed by the Refuge (See Murphy 1984 and Reiswig and Raymond 1993)

Mining in the Sheldon NWR occurred more recently. The Virgin Valley Mining District began in 1908 with the discovery of opals. In 1919, the largest black opal in the U.S., weighing almost 17 troy ounces, came from this District and is now on display at the Smithsonian Institution. Some opal prospecting extends into the area of the Badger Fire.

Refuge Development: The use of this land for cattle and sheep grazing impacted the vegetation of this area. Further, the increasing numbers of wild horses and burros added to this degradation of antelope habitat. By 1923 concern over the decline of antelope saw the State of Nevada legislature authorize the governor to set aside state controlled public domain lands as an antelope refuge. That same year Washoe County Commissioners set aside some 400 square miles in northwestern Washoe County as an antelope refuge. Following this, the Governor set aside 11 areas for recreation and wild game preservation, including one area in what would become the Sheldon NWR. In 1927, with assistance from the National Audubon Society and the Boone and Crockett Club of New York City, the Last Chance Ranch was purchased as part of a vision to create a Federal antelope refuge. As part of the funding agreement with the Boone and Crockett Club, the incipient refuge was to be named after one of their leading members,

Charles Sheldon. On June 20, 1929, Executive Order 5141 withdrew a six by eight mile area around the ranch. Since that time, private in-holdings within the refuge were acquired when available. On January 26, 1931, Executive Order 7522 officially created the Sheldon Antelope Refuge. August 16 of that year saw the Audubon society transfer the Last Chance Ranch to the U.S. Government. In 1935, additional lands were added to the Refuge.

In 1935, the Civilian Conservation Corps established a camp on the Refuge. Between 1935 and 1941, they were responsible for numerous improvements on the Refuge, including construction of cabins, dams, roads, fencing and spring development. Badger Cabin, several dams and other features in the area of the Badger Fire were constructed by the CCC's during this time.

Beginning in 1946, the first efforts to control wild horses began and between that year and 1948, 1,427 horses were removed. In 1965 another 86 horses were taken from the Refuge. In 1968, bighorn sheep were introduced. Since that time various improvements to Sheldon NWR have continued.

III. RECONNAISSANCE METHODOLOGY

Protection of human life and property from wildfire takes precedence over the protection of historic and prehistoric cultural properties. However, the diminishing number of such sites that represent human occupation of the area over time must be provided protection whenever possible.

Minimal protection of cultural resources were integrated into suppression efforts. During the Badger Fire (August 23-28, 1999), Badger Cabin and Alkali Ranch, were brushed and protected. Cross-country bulldozer lines were kept to a minimum and Refuge roads were closed. Rehabilitation of dozer line was done prior to the fire being controlled on September 5th.

BAER team archaeologists, Chuck James and Anan Raymond, arrived in Lakeview, OR, on September 8, 1999. Following a search of site records, they reconnoitered the burned area by vehicle and foot on September 9. In addition to confirming the location of drop points, heliports, dozer and hand lines roads through the fire were driven to determine if cultural sites were exposed to view from the fire. They also interviewed knowledgeable employees of the resources within the Sheldon NWR and inspected several burned over springs and areas of cultural resources previously recorded or reported. A helicopter reconnaissance of the fire was made on September 10. During this time the primary helipad at Dufferena Field Station and the <2.0 acre bladed fire camp parking area at Thousand Creek Guard Station were surveyed in 10 meter transects. The helipad is unmodified meadowland that is reached by graveled road. No subsurface disturbance was noted nor were cultural material present. The graded parking area at Dufferena was surveyed with negative results. Raymond departed following the September 10 workday.

A guiding principle as well as legal requirement of burned area rehabilitation is to regard archaeological sites and materials as elements of a watershed. If post-fire conditions indicate erosion threats or other potential watershed problems then the cultural resources must receive special attention to insure their unique and irreplaceable values are given full consideration.

Incident-related damages to cultural resources fall into two broad categories of impacts: those caused by the fire and those caused by suppression related activities. Fire related impacts include thermal fracture of obsidian and crypto-crystalline materials, destruction of wooded structures and features, loss of organic elements in occupational or midden deposits, destabilization of soils within a site with resultant increase in erosion, wind deflation of loosened sediments, and increased susceptibility to vandal looting and surface collecting because of greater surface visibility. Suppression related impacts come from disturbance or destruction of part or all of a site through dozer or hand line construction, fire camps, equipment staging areas, and rehabilitation efforts including restoration of dozer and hand lines, silt basin construction, restoration of range and forest lands, and replacement of lost infrastructure.

IV. Findings

The Badger Fire contained approximately 50,000 acres within its external boundary. Within this larger area, several major areas and some smaller islands of unburned land remain. The 1999 assessment of the Badger fire was limited to those cultural resources within the burned area of the fire's perimeter. While most of this area has not been formally surveyed, never-the-less a wide diversity of site types are represented. These represent a wide range of site types, including prehistoric rock shelters, lithic sites, quarry areas and areas of deeper midden; and historic dams, spring improvements, erosion features, transportation corridors, corrals, line camps, shelters, shelters and cabins, home or ranch steads, cabins, mines and trash scatters. While these sites represent a long period of prehistoric and historic occupation, many occur within the same land form or space, adding a degree of complexity to recording sites.

The following table summarizes the known or documented cultural resources within the burned portion of the Badger Fire. Due to the distances involved it was not possible to assess each site individually. Site assessment must wait for the cultural resource inventory to be done. With the exception of discing the <2 acre Dufferena disturbance in advance of seeding, no land disturbance activities are in the proposed rehabilitation for the Badger Fire. Of concern, however, is the spring return Of a large number of wild horses into the burn area, attracted to the new growth of grass.

Table 1. Inventory of Known Cultural Resource within the Badger burn

Site Number	Field Number	Name	Site Type	Visited
26Hu1244		Ten Mile Spring site	Spring, site	N
26Hu1245		Martinez Spring	Spring, site	Y
26Hu1246		Delaney Spring Site	Spring, site, Rockshelter?	Y
26Hu1247		Corral Springs Site	Spring, site, Rockshelter	Y
26Hu1250		Stockyard Springs Site	Spring, site	N
B-1		Spring south of Little Buckaroo	Spring, site	Y
B-2		Little Buckaroo Spring site	Spring, site	Y
B-3		Big Buckaroo Spring Site	Spring, site	Y
B-4		Martinez Rockshelter	Rockshelter	Y
B-5		Alkali Ranch	Homestead	Y
B-6		Rockshelter near Martinez Spr	Rockshelter	Y
B-7		Little Buckaroo Line camp	Rock wall shelter	Y
B-8		Rockshelter near Badger	Rockshelter	N
B-9		Site near Mahogany Springs	Rockshelter.	N
		(Note: May be part of 26HU1249 (Mahogany Springs Site)		
B-10		Badger Cabin	CCC cabin project	N
B-11		Badger Spring site	Spring, site	N
B-12		Line camp in Virgin Creek Historic cabin with? still		N
B-13		CCC dam at Alkali Res.	CCC project	N
B-14		Smith Lake site, dam	lithic scatter, CCC project?	N
B-16		Badger Flat site	lithic scatter	N
B-16		Mining site north Devaney	Mine	N
B-17		Smith Lake Rockshelter	Rockshelter	N
B-18-29		Note: Unnamed springs within burn (field #'s not assigned To specific springs. For tracking purposes only).		N

V. RECOMMENDATIONS

A. Management (Specification related) Four specifications were prepared to address known and potential effects to cultural resources. One is specific to sites and locales, and another to generic inventories for dozer lines. If this work is to be done through contracts, each contract must address specific rehabilitation needs for properties damaged by the wildfire. At present no discing or seed drilling is proposed outside of the surveyed <2 acre area at the Thousand Creek Guard Station. If

such activities are done, additional contracts would need to be written to initiate efforts to survey such un-inventoried areas for cultural resources in advance of ground disturbing activity.

After inventory, each recorded site must be evaluated for potential eligibility to the National Register of Historic Places, in keeping with the Sheldon National Wildlife Renewable Resources Plan (1980). Only properties eligible to the National Register may be considered as significant, and thus eligible for treatment.

Archeological Survey of Dozer Lines - C1a

Approximately 15 miles of dozer and hand line was put in on the Badger Fire. These lines will be inventoried for potential effects to sites that may have been impacted by this activity. Sites located will be evaluated for their potential eligibility to the National Register.

Cultural Resource Damage Assessment & Monitoring - C1b

Five documented and twenty eight undocumented sites are known to be within the burned portion of the Badger Fire. These sites will be documented and assessed to determine damage caused by fire effects and/or suppression. Two spring sites will be tested for cultural deposit depth and will have follow up monitoring of soil and vegetation gain or loss done to determine effects of horse trampling.

Law Enforcement Patrols to Protect Archeological Resources - C1

With the high degree of looter activity following fires in the Great Basin, law enforcement monitoring of closed roads, observation of people in site locations, and other activities designed to protect the cultural resources until winter arrives, will be done.

Native American Consultation - C1

Consultation with Indian Tribes and the Nevada State Historic Preservation Office is required by Section 106 of the National Historic Preservation Act. Four Federally recognized Tribes have been identified to be consulted with. This should be done at the beginning of specification work. When results of the work are available, and at the conclusion of such work.

- B. Management (Non-specification related)** Historic File. Because the Sheldon NWR is removing fences as part of its land management, It is recommended that a historic file be developed in which historical information including information and maps on fences, corrals and other Refuge developments be maintained. Such documents and maps are important in recreating past activities and assist in the preservation of historic land use patterns (historic landscapes). Such a file would also aid Refuge research and assist in emergency site location.

Wild Horse Impact. This is an observation of the impact wild horses have on cultural resources and possibly the small mammal population within Sheldon NWR. Ground observations noted extensive wild horse trampling near springs within the Badger Fire while helicopter observations indicated a more widespread impact of entrenched horse trails connecting horse “wallows” in areas of soft, less rocky soil. These areas occur in locations favorable for prehistoric occupation as well as over small mammal dens, and have impacted both.

Brushing Around Historic Structures. A positive effort was made to brush around historic sites prior to and during the Badger Fire. This is a positive protective measure and the Refuge should be commended for its proactive work. As able, this effort should be continued around buildings as well as wooden fences, corrals, and other perishable features that are visual monuments to a bygone era.

Looting. There is a strong tradition of illegal arrowhead hunting and artifact looting in the region. The easy visibility of the sites yet difficulty of law enforcement in this remote and rugged landscape is of concern to the FWS and Tribes. Most of the prehistoric cultural resources on Sheldon NWR are lithic scatters at and near the surface. Consequently sites are easily damaged by surface disturbance from vehicles and repeated trampling by large animals, such as wild horses. Historic sites present in the Refuge are also subject to illegal collecting. The Sheldon Refuge has been proactive in recognizing this problem and closing off roads and moving scarce resources into the area to deter such activity. The Refuge should be commended for taking such actions. As future opportunities come available,

the Refuge should coordinate public awareness of the importance of cultural resources with other Federal Agencies and Tribes. Systematic surveys within the Refuge would also assist in the management of cultural resources. In times of limited budget, research opportunities with colleges and universities could be explored.

VI. CONSULTATIONS

Consultant	Date(s)	Subject and Results
Jo Reese, AINW, Portland, OR (503)761-6605	9/9/99	Cost estimate for types of survey costs
Michael Boynton, USFS Archaeologist, Hood River, OR (541)979-4414	9/9/99	Survey/cost estimates used for 1999 Northern Nevada Fire Complex
Andy Goheen, Fire Rx Specialist, Sheldon NWR, Lakeview, OR (541)947-3315	9/8-10/99	Knowledge of sites, consideration of sites During fireline construction.
Steve Clay, Deputy Project Leader, Sheldon NWR, Lakeview, OR (541)947-3315	9/10/99	Knowledge of archaeology on refuge.
Nancy Gates, archaeological consultant, Alturas, CA (530)233-4447	9/11-13/99	Survey cost estimates.
Rebecca Fuller, Historic Preservation Specialist, NV SHPO, 100 N. Stewart St. Carson City, NV 89701 (775)684-3440	9/13/99	Initial project notification per Section 106. SHPO requests copy of BAER report.
Alice Baldrice, Deputy NV-HPO Carson City, NV 89701 (775)684-3444	9/14/99	State IMAC forms and report standards.

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**DEPARTMENT OF THE INTERIOR
BURNED AREA EMERGENCY REHABILITATION PLAN AND ACCOMPLISHMENT REPORT**

APPENDIX II: BADGER FIRE NATIONAL ENVIRONMENTAL POLICY ACT COMPLIANCE

- ? Badger Fire Burned Area Emergency Rehabilitation Plan, Environmental Action Statement
- ? Badger Fire Burned Area Emergency Rehabilitation Plan, Statement of Compliance
- ? U.S. Fish And Wildlife Service, Region 1, Environmental Compliance Certificate

**BADGER FIRE
BURNED AREA EMERGENCY REHABILITATION PLAN
Environmental Compliance Documentation**

A. FEDERAL ENVIRONMENTAL COMPLIANCE RESPONSIBILITIES

Burned Area Emergency Rehabilitation Team Responsibilities: All actions proposed in this plan by the Department of the Interior (DOI), Northern States Burned Area Emergency Rehabilitation (BAER) Team are subject to compliance with the National Environmental Policy Act (NEPA) in accordance with the guidelines provided by the Council on Environmental Quality (CEQ) Regulations (40 CFR 1500-1508): Department of the Interior Manual, Part 516; and U.S. Fish and Wildlife Service (FWS), NEPA Guidelines, Part 516 DM 6, Appendix 1. This section documents BAER Team considerations of NEPA requirements for prescribed rehabilitation and monitoring actions, described in the Badger Fire, Burned Area Emergency Rehabilitation Plan, for fire impacted lands within the legislative boundary of the Sheldon National Wildlife Refuge, Nevada.

B. RELATED PLANS AND CUMULATIVE IMPACT ANALYSIS

Actions proposed in this plan by the BAER Team are consistent with the management objectives established in the following NEPA documentation and management plan:

- ? *Sheldon NWR Horse Management Plan, Environmental Assessment (1977),*
- ? *Sheldon NWR Renewable Natural Resources Management Plan, Environmental Impact Statement (1980).*

The DOI, BAER Team has determined that no additional cumulative impact analysis is required for management actions proposed by the BAER Team in the Badger Fire Burned Area Emergency Rehabilitation Plan. This determination has been reached based on a comparative analysis between the proposed plan and the above management plan and environmental assessment.

C. APPLICABLE AND RELEVANT CATEGORICAL EXCLUSIONS

The individual actions proposed by the BAER Team in the Badger Fire Burned Area Emergency Rehabilitation Plan are adequately covered by the Sheldon NWR Management Plan Environmental Assessment, Sheldon NWR Natural Resources Management Plan, Environmental Impact Statement, or are Categorically Excluded from further environmental analysis as provided for in the Department of the Interior, Manual Part 516 and U.S. Fish and Wildlife Service, NEPA Guidelines, Part 516 DM 6, Appendix 1. All applicable and relevant Department and Agency Categorical Exclusions are listed below. Department exceptions (516) DM 2.3 do not apply to any of the individual actions proposed. Categorical Exclusion decisions were made with consideration given to the results of required emergency consultations completed by BAER Team.

Departmental Categorical Exclusions:

- 516 DM 6 App. 1.4A (3) iii The planting of seeds or seedlings and other minor revegetation actions.
- 516 DM 6 App. 1.4A (5) Fire management activities, including prevention and restoration measures, when conducted in accordance with departmental and Service procedures.

STATEMENT OF COMPLIANCE FOR THE BADGER FIRE BURNED AREA EMERGENCY REHABILITATION PLAN

The following executive orders and legislative acts have been reviewed as they apply to the Telephone Fire BAER Plan.

1. **Executive Order 11593. Protection and Enhancement of the Cultural Environment.** The Regional Archeologist has initiated necessary consultation with the Nevada State Historic Preservation Office (SHPO) regarding treatments proposed in the Badger Fire BAER Plan. Funding has been provided in this plan for continued consultation including consultation with appropriate Tribal representatives.
2. **Executive Order 11988. Floodplain Management.** No treatments area proposed within floodplains.
3. **Executive Order 11990. Protection of Wetlands.** No treatments are proposed with jurisdictional wetlands.
4. **Executive Order 12372. Intergovernmental Review.** Coordination and consultation is ongoing with affected Tribal, local, and State governments, other Federal agencies. Notification of the Categorical Exclusion will be sent to all affected parties through dissemination of the Telephone Fire BAER Plan. The BAER Team specifically consulted with the U.S. Fish and Wildlife Service, Ecological Service Division, Reno Nevada and the Nevada SHPO.
5. **Executive Order 12892. Federal Actions to Address Environmental Justice in Minority and Low-Income Populations.** All Federal actions must address and identify, as appropriate, disproportionately high and adverse human health or environmental effects of its program, policies, and activities on minority populations, low-income populations, and Indian Tribes in the United States. The actions proposed in this plan have been designed to protect properties of the Sheldon National Wildlife Refuge and have been developed in consultation with Tribal representatives. The BAER Team Environmental Protection Specialist has determined that the actions proposed by the BAER Team in the Badger Fire BAER Plan will result in no adverse human health or environmental effects for minority or low-income populations and Indian tribes.
6. **Endangered Species Act.** The BAER Team Vegetation Specialist has consulted with the U.S. Fish and Wildlife Service regarding actions proposed in this plan and potential affects on Federally listed species and has determined that there is no affect.
7. **Coastal Zone Management Act, Section 307.** The refuge is outside the Coastal Zone Management Act boundaries.
8. **Secretarial Order 3127. Contaminats and Hazardous Waste.** There are no known contaminants or hazardous materials within the project area.
9. **Clean Water Act.** The BAER Team Environmental Protection Specialist has determined that there are no treatments within the plan that would adversely affect water quality.

BAER Team, Environmental Protection Specialist

Date

**U.S. FISH AND WILDLIFE SERVICE, REGION 1
ENVIRONMENTAL COMPLIANCE CERTIFICATE**

PROJECT: BADGER FIRE BURNED AREA EMERGENCY REHABILITATION PLAN

STATE: Nevada

UNIT: Sheldon National Wildlife Refuge

ACTION (indicate if not applicable)

NEPA (National Environmental Policy Act)

Categorical Exclusion 9/99
Environmental Assessment/Finding of No Significant Impact (Sheldon Wild Horse Plan/EA) 1977
Environmental Impact Statement/Record of Decision (Sheldon NWR Nat. Res. Mgmt. Plan/EIS) 1980

Executive Order 11593, Protection and Enhancement of the Cultural Environment. 9/99

Executive Order 11988, Floodplain Management 9/99

Executive Order 11990, Protection of Wetlands 9/99

Executive Order 12372, Intergovernmental Review of Federal Programs 9/99

Executive Order 12898, Federal Actions to Address Environmental Justice
in Minority and Low-Income Populations 9/99

Executive Order 12996, Management and General Public Use of the
National Wildlife Refuge System 9/99

Endangered Species Act 9/99

Coastal Zone Management Act, Section 307 9/99

Level 1 Contaminants and Hazardous Waste (Secretarial Order 3127: 602DM2) 9/99

I hereby certify that all requirements of the law, rules, and Service regulations or policies applicable to
planning for the above project have met with compliance.

Project Leader
Sheldon - Hart Mountain National Wildlife Refuge Complex

Date:

**DEPARTMENT OF THE INTERIOR
BURNED AREA EMERGENCY REHABILITATION PLAN AND ACCOMPLISHMENT REPORT**

APPENDIX III: BADGER FIRE MAPS

- ? Fire Perimeter and Suppression Impacts Map
- ? Post-fire Vegetation Map
- ? Bighorn Sheep Habitat Affected by the Badger Fire
- ? Pronghorn Habitat Affected by the Badger Fire
- ? Sage Grouse Habitat Affected by the Badger Fire